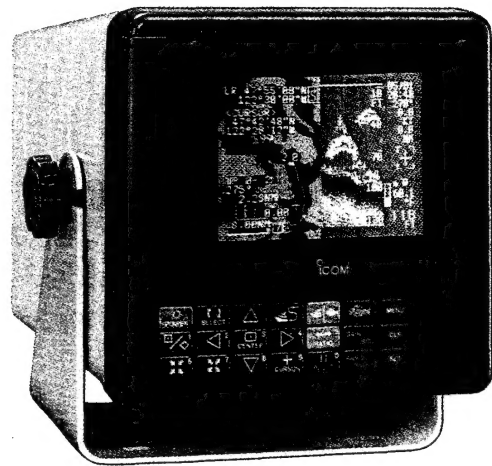




INSTRUCTION MANUAL

MARINEPLOTTER/SOUNDER

FP-601



Icom Inc.

GENERAL CAUTION

The FP-601 is a supplemental aid to navigation only and is not intended to be a substitute for accurate and current nautical charts.

DO NOT try to install a transducer by yourself. If a through hull transducer is selected for your boat, have a dealer install it.

DANGER! HIGH VOLTAGE

- **NEVER OPEN THE UNIT**

This product contains high voltages that are FATAL. This product has no user-serviceable parts inside. All repairs and adjustments **MUST** be made by a qualified electronics technician.

- **HIGH VOLTAGES**

High voltages of up to tens of thousands of volts are used in this equipment. Although prudent measures for safety have been adopted, sufficient care must be taken in the operation, maintenance and adjustment of the equipment.

Electric shock of 1000 volts or more causes electrocution and death; even an electric shock of only 100 volts can be fatal.

- **PREVENTION OF ELECTRIC SHOCK
(FOR QUALIFIED ELECTRONICS TECHNICIANS ONLY)**

To prevent such accidents, turn OFF the power source and do not reach inside until you have: ① discharged capacitors through a wire securely grounded at one end; and ② checked that no electrical charges remain inside the device.

Also, it is safest to wear dry wool gloves. **NEVER** use both hands simultaneously; keep one hand in your pocket.

IMPORTANT

READ ALL INSTRUCTIONS carefully and completely before using the FP-601.

SAVE THIS INSTRUCTION MANUAL – This instruction manual contains important safety and operating instructions for the FP-601.

FOREWORD

Thank you for purchasing Icom's FP-601 MARINE-PLOTTER/SOUNDER.

The FP-601 consists of both a plotter and a sounder. You can use both simultaneously or separately on the 6 inch color CRT.

If you have any questions regarding the operation of the FP-601, contact your nearest authorized Icom Dealer or Service Center.

EXPLICIT DEFINITIONS

The following explicit definitions apply to this instruction manual.

WORD	DEFINITION
WARNING	Personal injury, fire hazard or electrical shock may occur.
CAUTION	Equipment damage may occur.
NOTE	If disregarded, inconvenience only. No personal injury, fire hazard or electrical shock will occur.

PRECAUTIONS

NEVER let metal, wire or other objects touch any internal part of the FP-601.

NEVER place the FP-601 within the reach of children.

NEVER expose the FP-601 to rain, salt water or any other liquids.

NEVER connect the FP-601 to AC or more than 40 V DC. This will damage the FP-601.

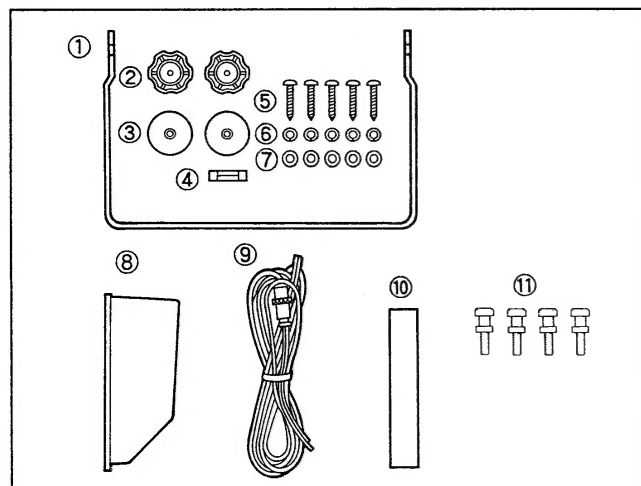
AVOID using the FP-601 near any magnetic materials, such as a loudspeaker or a large power transformer, as this can cause distortion on the CRT screen.

AVOID placing the FP-601 near heating equipment or in direct sunlight or where hot or cold air blows directly onto it.

AVOID using the FP-601 in areas where the temperature is over + 50 °C or under 0 °C.

AVOID using strong agents such as benzine or alcohol for cleaning the FP-601 as they may damage the surfaces.

UNPACKING



Accessories included with the FP-100: Qty.

① Mounting bracket	1
② Mounting knobs	2
③ Rubber washers	2
④ Spare fuse (5 A)	1
⑤ Self-tapping screws (M6 x 30)	5
⑥ Spring washers (M6)	5
⑦ Flat washers (M6)	5
⑧ Viewing hood	1
⑨ DC power cable (OPC-275)	1
⑩ Sponge	1
⑪ Hood screws	4

TABLE OF CONTENTS

GENERAL CAUTION	i	3 PLOTTER OPERATION	11 ~ 48
DANGER! HIGH VOLTAGE	i	3-1 Selecting plotter mode	11 ~ 16
IMPORTANT	ii	■ Plotter mode	12
FOREWORD	ii	■ Plot screen	13
EXPLICIT DEFINITIONS	ii	■ Navigation monitor screen	14
PRECAUTIONS	ii	■ GPS monitor screens	15
UNPACKING	ii	■ Loran-C monitor screens	16
TABLE OF CONTENTS	ii ~ iv	3-2 Chart operation	17 ~ 22
PREOPERATION	v ~ vi	■ Changing the chart scale	17
		■ Moving the chart	18
		■ Memorizing a chart into the FP-601 memory	19
1 PANEL DESCRIPTION	1 ~ 5	■ Selecting the navigation receiver	20
■ Front panel	1	■ Selecting the position data	20
■ Display explanation	3	■ Various indications	21
		■ Distance measurement	22
2 FIRST APPLYING POWER	6 ~ 10	3-3 Track operation	23 ~ 24
2-1 Notice	6	■ Track indication	23
2-2 Initial setting in the set mode	7	■ Track color selection	23
2-3 Initial setting for chart	8	■ Plotting interval	24
2-4 Initial setting for GP-2000	9	■ Erasing the track	24
2-5 Initial setting for RX-1191	10	3-4 Event mark	25 ~ 28
		■ Programming event marks	25
		■ Erasing event marks or changing event type and color	27
		■ Listing-up event marks	28
		3-5 Navigation function	29 ~ 41
		■ Function description	29
		■ Programming waypoints	29
		■ Erasing waypoints	31
		■ Changing waypoint Lat/Lon data	32
		■ Destination navigation (Basic navigation)	33
		■ Programming, erasing and reprogramming routes	37
		■ Route navigation	38
		■ External navigation	41
		3-6 Plotter alarms	42
		■ Alarm types	42
		■ Alarm setting	42
		3-7 RAM card	43 ~ 44
		3-8 GPS data correction	45
		3-9 Loran-C data correction	46 ~ 48

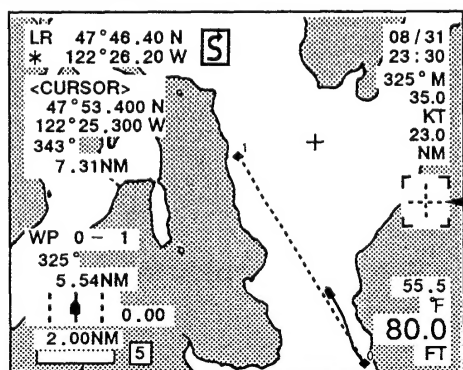
4 SOUNDER OPERATION	49 ~ 68	5 COMMON FUNCTIONS	69 ~ 74
4-1 Selecting sounder mode	49 ~ 54	■ CRT brightness	69
■ Sounder mode	50	■ Key illumination	69
■ Compulsory settings	51	■ Trip log	70
■ Basic screen	53	■ Heading data	71
■ Basic + bottom lock screen	54	■ Speed data	71
4-2 Basic settings	55 ~ 56	■ GPS/Loran-C priority	72
■ Depth range setting	55	■ Positioning correction	72
■ Phase shift setting	55	■ True or magnetic bearing	73
■ Sensitivity adjustment	56	■ Declination	73
■ Sensitivity of outer layer adjustment	56	■ Built-in simulator	74
4-3 Advanced settings	57	6 INSTALLATION AND CONNECTIONS ...	75 ~ 78
■ Auto function	57	■ System connections	75
■ Pause function	57	■ Installation	77
4-4 Sounder menus	59 ~ 62	7 MAINTENANCE	79 ~ 80
■ Interference rejection	59	■ Troubleshooting	79
■ Noise reduction	59	■ Preventive maintenance	80
■ Display speed setting	60	■ Fuse replacement	80
■ Bottom discrimination	60	■ Incorrect display	80
■ Range of bottom lock	61	■ Backup battery	80
■ Display background color	61	8 MENU MODE CHART	81 ~ 82
■ Depth scale	62	9 SCREEN FLOW CHART	83 ~ 84
■ Data indication	62	10 LORAN-C MAP	86
4-5 Display interpretation	63 ~ 66	11 SPECIFICATIONS	87
■ Color bar and time mark	63	12 OPTIONS	88
■ Echo from the sea bottom	63		
■ Fish school echos	64		
■ Second echo	64		
■ Plankton and tidal current	65		
■ Thermoclines	65		
■ Aeration	66		
■ Spurious bottom lines by side lobes	66		
4-6 Sounder alarms	67 ~ 68		
■ Alarm types	67		
■ Alarm setting	68		
■ Alarm operation	68		

PREOPERATION

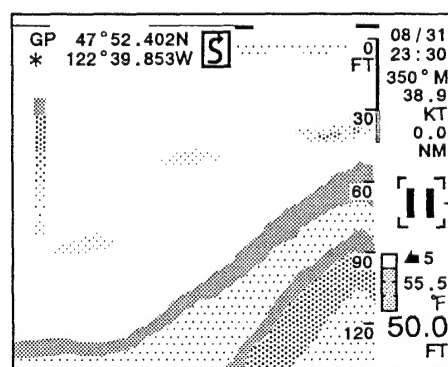
The following descriptions will assist in operation.

• Condition indicator


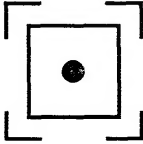
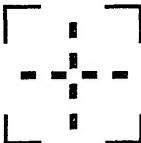
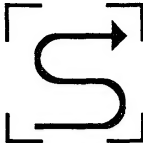



The condition indicator shows the selected function or condition, or appears when the condition matches a pre-set condition.



Condition indicator



Condition indicator

INDICATION	DESCRIPTION	INDICATION	DESCRIPTION
	ERROR INDICATOR Appears with a beep sound when you push a key or rotate the dial which is not applicable for the setting, selection or choice.		CENTER INDICATOR Appears when the center function is activated in the plotter mode or combination mode.
	CURSOR INDICATOR Appears when the cursor is ON in the plotter mode or combination mode.		TRACK ERASING INDICATOR Appears while track erasing is being performed in the plotter mode or combination mode.
	PAUSE INDICATOR Appears when the pause function is activated in the sounder mode or combination mode.	 SOUNDER ALARM INDICATORS Appear with alarm beeps when the sea condition matches the pre-set alarm condition. See p. 67 for details.	
	PLOTTER ALARM INDICATORS Appear with alarm beeps when your vessel position matches the pre-set alarm condition. See p. 42 for details.		

• Data card descriptions

TYPES OF DATA CARDS

Icom offers 3 types of optional data cards as described below. The ROM cards should be programmed to suit your navigation needs.

EX-1140 ROM CARD	Offers pre-programmed charts. 1 or 2 charts are programmed into each card in the factory.
EX-1141 ROM CARD	Offers pre-programmed charts. Several charts are programmed into each card in the factory.
EX-1142 RAM CARD	Used for programming of displayed track, event marks, waypoints and routes. The card has memory space for storing 2 sets of separate data.

DATA CARD PRECAUTIONS

The displayed chart on the screen is only for navigation reference. **USE AN ACTUAL MARINE CHART** when you need to make a decision.

NEVER bend the data card or place any heavy objects on the card.

NEVER throw or drop the data card.

AVOID leaving the data card in a dusty area and **NEVER ALLOW** dust to enter the connector.

Since the usual life of the internal battery of a RAM card is approx. 5 years, your important data such as event marks and routes should be recorded into a notebook.

DATA CARD INSTALLATION

Insert the data card into the card slot straight and smoothly until the card stops with the Icom logo mark on the right side as shown in the figure at right.

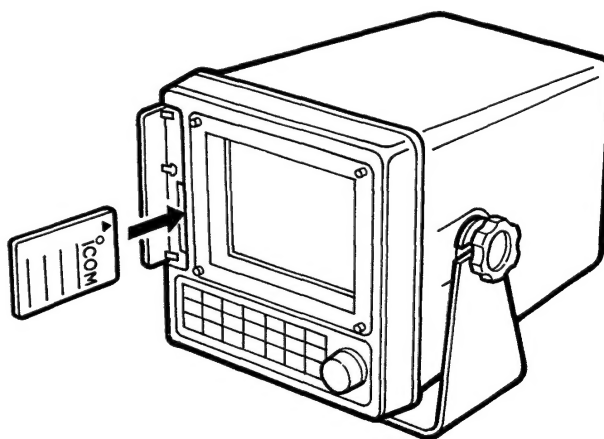
- When a data card is not inserted completely, the card will not operate.

To pull out the data card, pinch the card, then pull the card straight and smoothly.

CAUTION:

NEVER insert or pull out the data card under the following conditions:

- When the center function has been activated.
- While selecting a chart.
- While the displayed chart is moving.
- When reading, programming or erasing the data with a RAM card.

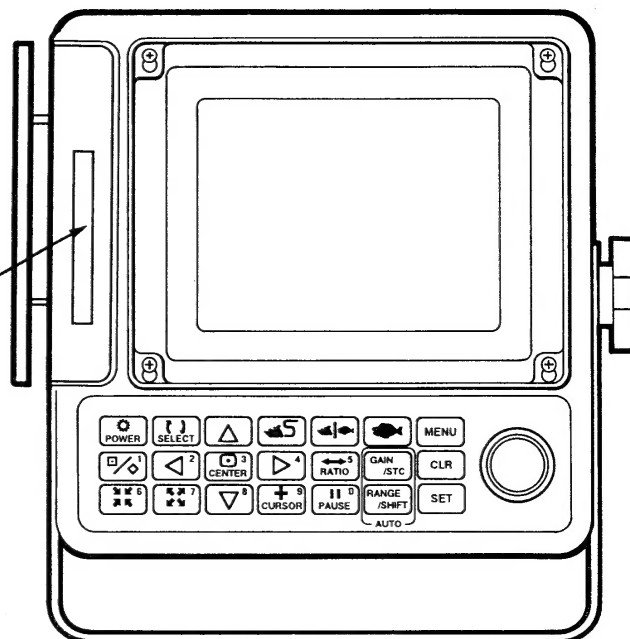


• Cyan letters in the menu mode

In the menu mode, function names or positioning data, etc. may appear in cyan letters.

These cyan letters indicate that you **CANNOT** set the function or edit the positioning data, because the function or positioning data will be incorrect if they are reset.

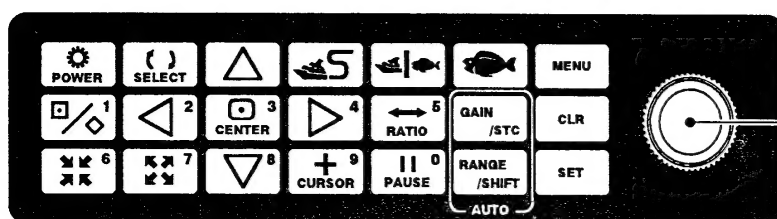
Front panel



CARD SLOT (pgs. vi, 8 and 43)
Accepts optional data cards.




The following data cards are available.



















- **EX-1140/EX-1141 ROM CARD**
For digitized chart recall.
- **EX-1142 RAM CARD**
For waypoints, event mark memory.



DIAL

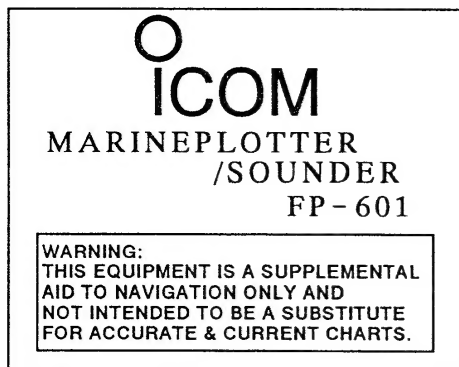
- Select an item, value or condition in the set and menu modes.

KEY	FUNCTION	Ref. page
	<ul style="list-style-type: none"> - Turns power ON. - Turns power OFF when pushed for 3 sec. 	6
	<ul style="list-style-type: none"> - Programs and clears event marks or waypoints. Use this key together with [SET] and [CLR]. - Starts and cancels navigation functions. Use this key together with the dial and [SET]. - Selects item number "1" or enters the digit "1" in the menu mode. 	25 ~ 36
	<ul style="list-style-type: none"> - Reduces the scale of the displayed chart. <ul style="list-style-type: none"> • This key continuously changes the chart scale when pushed and held. - Selects item number "6" or enters the digit "6" in the menu mode. 	17

KEY	FUNCTION	Ref. page
	<ul style="list-style-type: none"> - Changes between plot screens 1 and 2, GPS monitor screens 1 and 2, or Loran-C monitor screens 1 and 2 in the plotter mode. - Performs as the selecting key in the menu mode. - Changes event type. 	12, 17
	<ul style="list-style-type: none"> - Moves the cursor to the left. - Selects item number "2" or enters the digit "2" in the menu mode. 	18
	<ul style="list-style-type: none"> - Magnifies the scale of the displayed chart. <ul style="list-style-type: none"> • This key continuously changes the chart scale when pushed and held. - Selects item number "7" or enters the digit "7" in the menu mode. 	17
	Moves the cursor upwards.	18
	<ul style="list-style-type: none"> - Moves the chart with the cursor or vessel position being in the center. <ul style="list-style-type: none"> • When the cursor is OFF, the vessel is in the center. • When the cursor is on, the cursor is in the center. - Selects item number "3" or enters the digit "3" in the menu mode. 	18
	<ul style="list-style-type: none"> - Moves the cursor downwards. - Selects item number "8" or enters the digit "8" in the menu mode. 	18
	<ul style="list-style-type: none"> - Selects the plotter mode when the sounder mode has been selected. - Selects a screen when the plotter or combination mode has been selected. <ul style="list-style-type: none"> • Plot screen → Navigation screen → GPS monitor screen → Loran-C monitor screen - Exits the menu mode. 	11 ~ 12
	<ul style="list-style-type: none"> - Moves the cursor to the right. - Selects item number "4" or enters the digit "4" in the menu mode. 	18
	<ul style="list-style-type: none"> - Turns the cursor ON and OFF. - Selects item number "9" or enters the digit "9" in the menu mode. 	22, 25, 29, 33, 40
	<ul style="list-style-type: none"> - Changes between the plotter or sounder mode and the combination mode. - Exits the menu mode. 	11, 49
	<ul style="list-style-type: none"> - Changes the rate of plot screen to sounder screen in the combination mode. - Selects item number "5" or enters the digit "5" in the menu mode. 	83
	<ul style="list-style-type: none"> - Pauses the sweep of the sounder display in the sounder mode. - Selects item number "0" or enters the digit "0" in the menu mode. 	57
	<ul style="list-style-type: none"> - Selects the sounder mode when the plotter mode has been selected. - Selects a screen when the sounder or combination mode has been selected. <ul style="list-style-type: none"> • Basic screen ↔ Basic + bottom lock screen - Exits the menu mode. 	49 ~ 50
	<ul style="list-style-type: none"> - Sets the sensitivity level. Use this key together with the dial. - Sets the STC level when pushed and held for 3 sec. Use this key together with the dial. 	56
	<ul style="list-style-type: none"> - Sets the depth range. Use this key together with the dial. - Sets the phase shift of the depth range when pushed and held for 3 sec. Use this key together with the dial. 	55
	<ul style="list-style-type: none"> - Selects the menu mode. - Returns to the previous window in the menu mode. 	84
	<ul style="list-style-type: none"> - Clears event marks or waypoints in the plotter mode. - Clears drawn track when pushed and held in the plotter mode. - Cancels settings. 	—
	<ul style="list-style-type: none"> - Determines the input data. - Selects a navigation receiver being used, positioning data method and track indication ON/OFF. Use this key together with the dial. 	20, 23

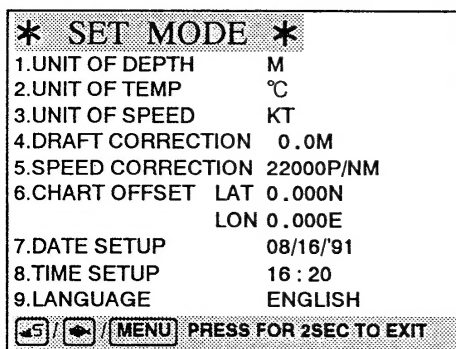
■ Display explanation

• Opening screen after the power is ON



After the power ON opening screen appears for 10 sec., then the previously used screen is automatically selected.

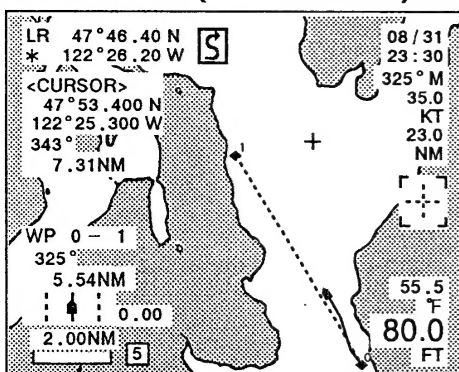
• Set mode screen



Shows the set mode contents for setting seldom changed variables.

This set mode display can be selected only if the [←] and [MENU] keys are pushed at power ON. See p. 7 for selecting the set mode.

• Plot screen (Plotter mode)

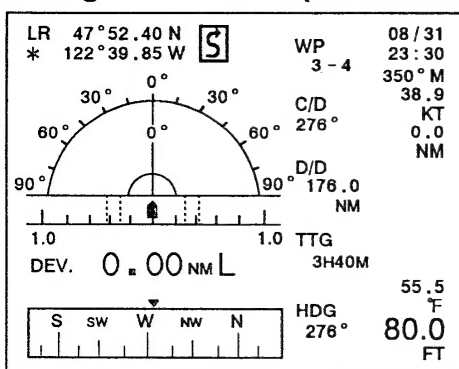


Shows your vessel position and track on an electronic chart.* Also shows waypoints, event marks and selected route.

The FP-601 includes 10 plot screen sizes. In addition, plotter screen 1 and plotter screen 2 are available for instant, often-used size selection. Push the [SELECT] key to change between plot screen 1 and 2.

*An optional ROM card is necessary to display a chart.

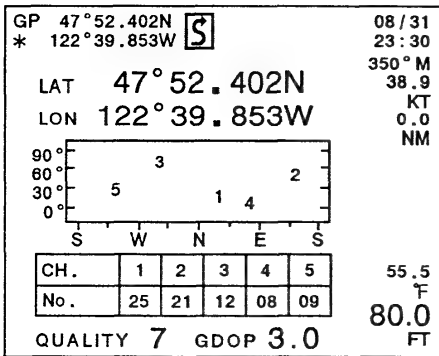
• Navigation screen (Plotter mode)



Shows information required for the navigation functions, on one screen, in numerals and graphics.

Almost no indicators and readouts will be displayed when all navigation functions are turned OFF.

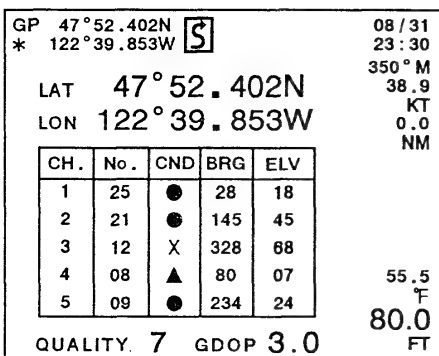
• GPS monitor screen 1 (Plotter mode)



Shows the receiving and setting conditions of an optional GP-2000 GPS RECEIVER UNIT.

When the GP-2000 is not connected, this screen cannot be selected.

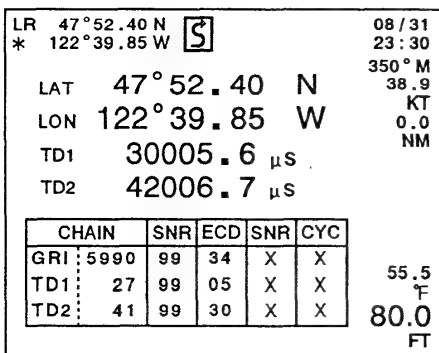
• GPS monitor screen 2 (Plotter mode)



This is a support screen for the GPS monitor screen 1. The satellite receiving condition is displayed on this screen.

When the GP-2000 is not connected, this screen cannot be selected.

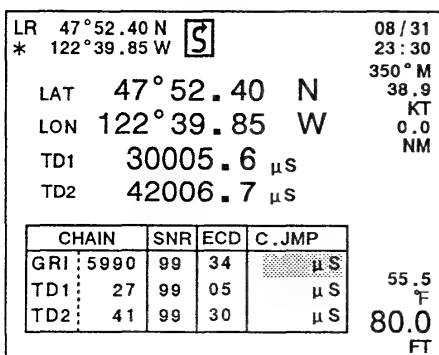
• Loran-C monitor screen 1 (Plotter mode)



Shows the receiving and setting conditions of an optional RX-1191 LORAN-C RECEIVER UNIT.

When the RX-1191 is not connected, this screen cannot be selected.

• Loran-C monitor screen 2 (Plotter mode)

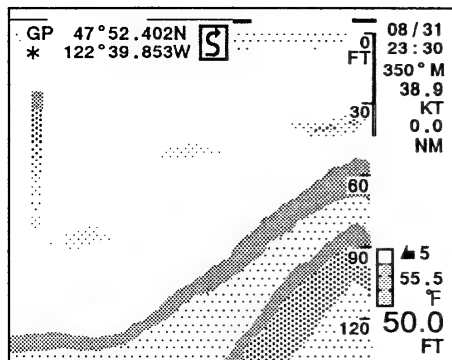


This is a support screen for the Loran-C monitor screen 1. The cycle jump correction can be performed on this screen.

When the RX-1191 is not connected, this screen cannot be selected.

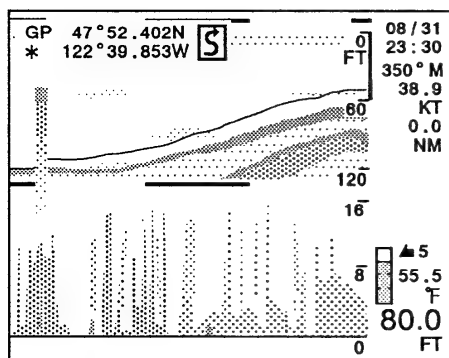
1 PANEL DESCRIPTION

• Basic screen (Sounder mode)



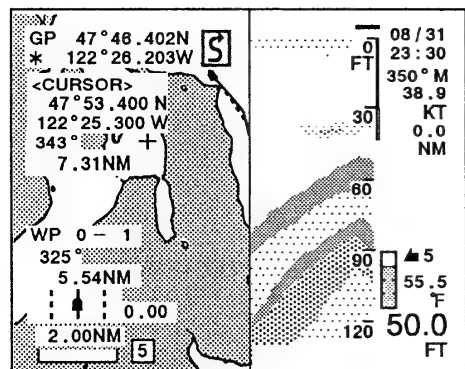
Shows the basic sounder display on the whole screen according to the value of [SHIFT] and [RANGE].

• Basic + bottom lock screen (Sounder mode)



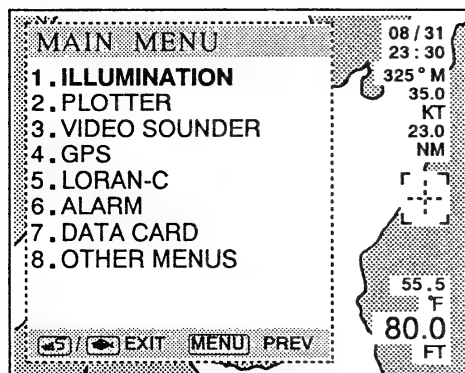
Shows the basic and bottom lock screens simultaneously. This screen is convenient for observing the condition of the sea bottom or investigating fish near the sea bottom.

• Combination screen



Shows one of the screens in the plotter mode and one of the screens in the sounder mode simultaneously. When the plot screen has been selected on the plotter side, the rate of each screen size can be changed in 4 steps.

• Menu screen (window)



Various windows appear in the menu mode for settings, activating functions, alarms, illumination, etc.

2-1 Notice

When first applying power, the FP-601 requires several initial settings. Required settings vary depending on the FP-601 operating condition. See the box below for details.

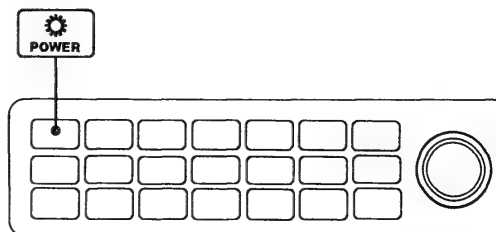
The initial settings are necessary again (except for "2-2 Initial setting in the set mode") when vessel position has changed by more than 60 miles or more than 1 degree while the power was OFF.

CONNECTED NAVIGATION RECEIVER	REQUIRED INITIAL SETTING	
	WITH ROM CARD	WITHOUT ROM CARD
Non-Icom navigation receiver only	2-2 Initial setting in the set mode.	2-2 Initial setting in the set mode.
GP-2000 GPS RECEIVER UNIT only	2-2 Initial setting in the set mode. 2-3 Initial setting for chart. 2-4 Initial setting for GP-2000.	2-2 Initial setting in the set mode. 2-4 Initial setting for GP-2000.
RX-1191 LORAN-C RECEIVER UNIT only	2-2 Initial setting in the set mode. 2-3 Initial setting for chart. 2-5 Initial setting for RX-1191.	2-2 Initial setting in the set mode. 2-5 Initial setting for RX-1191.
GP-2000 GPS RECEIVER UNIT and RX-1191 LORAN-C RECEIVER UNIT	2-2 Initial setting in the set mode. 2-3 Initial setting for chart. 2-4 Initial setting for GP-2000. 2-5 Initial setting for RX-1191.	2-2 Initial setting in the set mode. 2-4 Initial setting for GP-2000. 2-5 Initial setting for RX-1191.

NOTE: "2-3 Initial setting for chart" MUST be performed before "2-4 Initial setting for GP-2000" and "2-5 Initial setting for RX-1191."

• Power ON/OFF

- 1) When you have optional data cards, read the box on p. vi for data card descriptions before turning power ON.
- 2) Push [POWER] to turn power ON.
 - The opening screen appears for 10 sec., then one of the plotter mode, sounder mode or combination mode is selected.
- 3) To turn power OFF, push and hold [POWER] for 3 sec.






NOTE: While the opening screen is displayed, you can change the CRT brightness by rotating the dial.

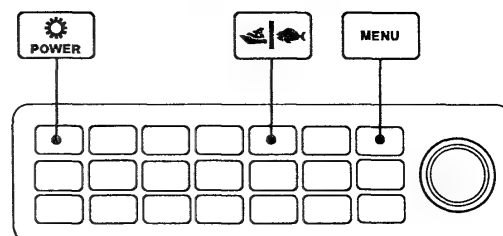
2 FIRST APPLYING POWER

2-2 Initial setting in the set mode

Initial setting in the set mode is necessary for proper use of the FP-601.

ENTERING THE SET MODE

- 1) Turn power OFF.
- 2) While pushing [MENU] and [], push [POWER] to turn power ON, then keep pushing [MENU] and [] until a single beep sounds.
- 3) Release [MENU] and [].



• In the set mode



* SET MODE *

1.UNIT OF DEPTH	M
2.UNIT OF TEMP	°C
3.UNIT OF SPEED	KT
4.DRAFT CORRECTION	0.0M
5.SPEED CORRECTION	22000P/NM
6.CHART OFFSET LAT	0.000N
	LON 0.000E
7.DATE SETUP	08/16/91
8.TIME SETUP	16 : 20
9.LANGUAGE	ENGLISH

 /  / [MENU] PRESS FOR 2 SEC TO FINISH

• Setting procedure

- 1) Enter the set mode. See the box above.
 - The screen displayed above appears.
- 2) Rotate the dial to select the item to be set, then push [SET].
 - The digit keys can also select the item.
 - The selected item turns green.
- 3) - Rotate the dial to select the unit or language for item numbers 1 ~ 3 and 9.

- Rotate the dial to determine the first digit for numeral input; then, enter the numerals with the digit keys for item numbers 4 ~ 8.
 - Use [SELECT] to select the direction unit.
- 4) Push [SET] to set the value.
 - The set item turns yellow.
- 5) Repeat steps 2 ~ 4 to set the value of all items.
- 6) Push and hold [], [] or [MENU] for 2 sec. to exit the set mode.

1. UNIT OF DEPTH

Meters (M), feet (FT) or fathoms (FM) are available as the units of water depth.

2. UNIT OF TEMP

Centigrade (°C) or Fahrenheit (°F) can be used as the units of water temperature.

3. UNIT OF SPEED

Knots (KT), kilometers/hour (km/h), or miles/hour (MI/h) can be used as the units of vessel speed.

- When Knot (KT) is selected, nautical mile (NM) is automatically selected as the unit of distance.

4. DRAFT CORRECTION

The distance between the sea surface and the transducer position or the bottom of the vessel's keel (draft) can be compensated for in order to show an accurate display.

5. SPEED CORRECTION

Input the pulse rate of the connected speed sensor. (e.g. EX-983: 24000 P/NM EX-1010: 22000 P/NM)

6. CHART OFFSET

The offset value makes up for position differences between your nautical chart and the chart in the FP-601.

7. DATE SETUP (Month/Day/Year)

The date is displayed in the upper right corner on any screen. Enter the date.

8. TIME SETUP

The time is displayed in the upper right corner on any screen. Enter the time.

9. LANGUAGE

Some versions accept languages for screen indication from the following 5: English, French, German, Italian and Spanish.

2-3 Initial setting for chart

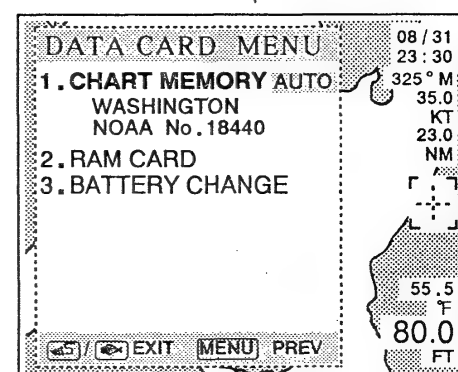
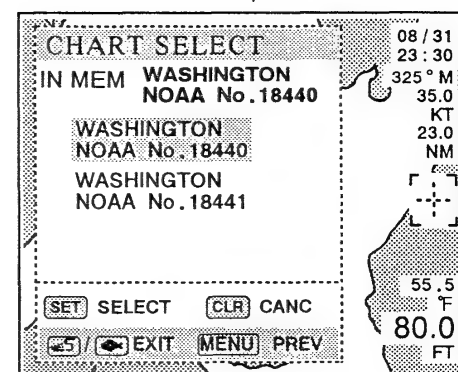
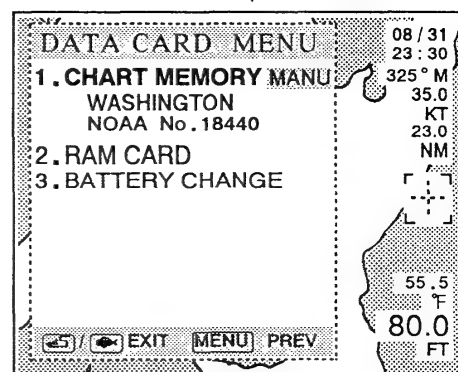
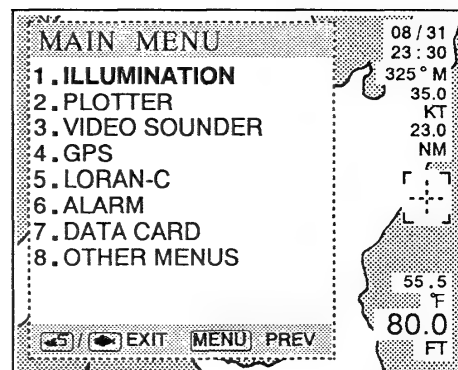
The initial setting for the chart is necessary when you use the FP-601 with an optional GP-2000 or RX-1191, and a ROM card.

This setting is not necessary when you do not use an optional ROM card.

- 1) Make sure the center function is NOT activated.
 - "□" is not displayed.
- 2) Push [MENU] to select the menu mode.
- 3) Select "DATA CARD" by rotating the dial; then, push [SET].
 - Pushing [7] also performs this function.
 - The data card menu window appears.
- 4) Insert your ROM card into the card slot.
- 5) Select "CHART MEMORY" by rotating the dial; then, push [SET].
 - Pushing [1] also performs this function.
 - "CHART MEMORY" turns green.
- 6) Rotate the dial to select "MANU"; then, push [SET].
 - The chart select window appears.
- 7) Rotate the dial to select the desired chart; then, push [SET].
 - "CHART MEMORY" turns yellow.
- 8) Push [SET] again.
 - Pushing [1] also performs this function.
 - "CHART MEMORY" turns green again.
- 9) Rotate the dial to select "AUTO"; then, push [SET].
 - "CHART MEMORY" turns yellow again.
- 10) You can pull out the ROM card if you desire.
 - When the ROM card is pulled out, only the selected chart can be used for FP-601 operation.
- 11) Push [←5] or [←] to exit the menu mode.

NOTE 1: Selected chart may not appear until section 2-4 Initial setting for GP-2000 (p. 9) or 2-5 Initial setting for RX-1191 (p. 10) is complete.

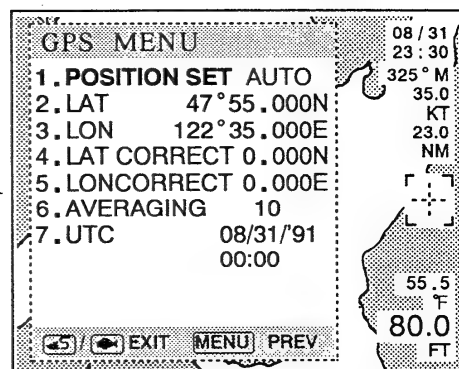
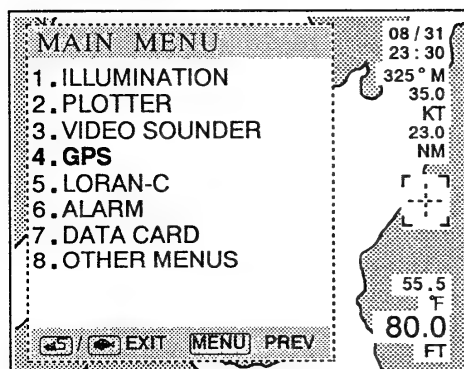
NOTE 2: "AUTO" and "MANU" in "CHART MEMORY" are also used for memorizing a chart into the FP-601. See p. 19 for details.



2-4 Initial setting for GP-2000

The initial setting for the GP-2000 is necessary when you use the FP-601 with an optional GP-2000 GPS RECEIVER UNIT.

NOTE: Initial settings in the GP-2000 itself are necessary before the FP-601 can be initialized. See the GP-2000 instruction manual for details.



• When using an optional ROM card

- 1) Perform the initial setting for chart described on p. 8.
- 2) Push [MENU] to select the menu mode.
- 3) Make sure the ROM card has been inserted.
 - If it is not inserted, insert it into the card slot.
- 4) Select "GPS" by rotating the dial; then, push [SET].
 - Pushing [4] also performs this function.
 - The GPS menu window appears.
- 5) Select "POSITION SET" by rotating the dial; then, push [SET].
 - Pushing [1] also performs this function.
 - "POSITION SET" turns green.
- 6) Select "AUTO" by rotating the dial; then push [SET].
 - "POSITION SET" turns yellow.
- 7) Make sure the UTC is correct.
 - If the UTC is wrong, set the UTC by the dial, digit keys and [SET].
- 8) Push [⏮] or [🐟] to exit the menu mode.
- 9) Push [⏮] or [⏭] to display the chart.

• When not using an optional ROM card

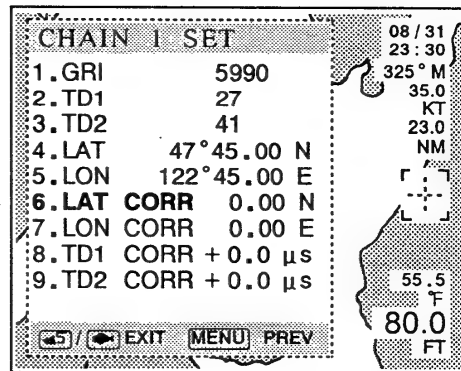
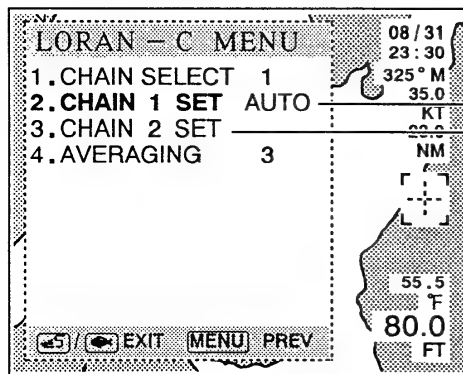
- 1) Push [MENU] to select the menu mode.
- 2) Select "GPS" by rotating the dial; then, push [SET].
 - Pushing [4] also performs this function.
 - The GPS menu window appears.
- 3) Set items in the GPS menu window using the dial, digit keys and [SET].
 - Refer to the table below.
- 4) After setting is complete, push [⏮] or [🐟] to exit the menu mode.

GPS menu window items

No.	ITEM	SETTING
1	POSITION SET	Select "MANU" when not using a data card.
2	LAT	Enter Lat/Lon data which are exact to within 1 degree .
3	LON	Once satellite data is caught, Lat and Lon data are corrected automatically.
4	LAT CORRECT	No need to set.
5	LON CORRECT	See p. 45 for explanation and setting.
6	AVERAGING	
7	UTC	Enter UTC (Universal Time Coordinate) data which are exact to within 30 min. Once satellite data is acquired, UTC is corrected automatically.

2-5 Initial setting for RX-1191

The initial setting for the RX-1191 is necessary when you use the FP-601 with an optional RX-1191 LORAN-C RECEIVER UNIT.



CHAIN 2 SETTING DISPLAY
Same contents as the chain 1 setting display.

• When using an optional ROM card

- 1) Perform the initial setting for chart. (p. 8)
- 2) Push [MENU] to select the menu mode.
- 3) Make sure the ROM card has been inserted.
 - If it is not inserted, insert it into the card slot.
- 4) Select "LORAN-C" by rotating the dial; then, push [SET].
 - Pushing [5] also performs this function.
 - The Loran-C menu window appears.
- 5) Select "CHAIN SELECT" by rotating the dial; then, push [SET].
 - Pushing [1] also performs this function.
 - "CHAIN SELECT" turns green.
- 6) Select "1" by rotating the dial; then, push [SET].
 - "CHAIN SELECT" turns yellow.
- 7) Select "CHAIN 1 SET" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - "CHAIN 1 SET" turns green.
- 8) Select "AUTO" by rotating the dial; then, push [SET].
 - The chain 1 setting window appears.
- 9) Push [5] or [EXIT] to exit the menu mode.
- 10) Push [ZOOM IN] or [ZOOM OUT] to display the chart.

• When not using an optional ROM card

- 1) Push [MENU] to select the menu mode.
- 2) Select "LORAN-C" by rotating the dial; then, push [SET].
 - Pushing [5] also performs this function.
 - The Loran-C menu window appears.
- 3) Set items in the Loran-C menu window and chain 1 or chain 2 setting window using the dial, digit keys and [SET].
 - Refer to the table below.
- 4) After setting is complete, push [5] or [EXIT] to exit the menu mode.

Loran-C menu window items

No.	ITEM	SETTING
1	CHAIN SELECT	Select "1" or "2."
2	CHAIN 1 SET	Select "MANU," then perform chain 1 setting as described in the box at right.
3	CHAIN 2 SET	Perform the chain 2 setting as described in the box at right.
4	AVERAGING	No need to set. See p. 48 for explanation and setting.

Chain 1 and 2 setting window items

No.	ITEM	SETTING
1	GRI	Enter the main station's number.
2	TD1	Enter the sub 1 station's number.
3	TD2	Enter the sub 2 station's number.
4	LAT	Enter Lat/Lon data which are exact to within 1 degree.
5	LON	
6	LAT CORR	No need to set.
7	LON CORR	See pgs. 46 ~ 47 for explanation and setting.
8	TD1 CORR	
9	TD2 CORR	

3 PLOTTER OPERATION

3-1 Selecting plotter mode

To display the digitized chart on a plot screen, an optional ROM card is necessary.

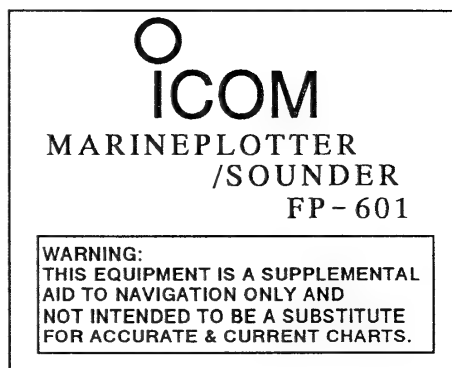
If an optional GP-2000 GPS RECEIVER UNIT or RX-1191 LORAN-C RECEIVER UNIT has been connected, the receiver requires initial settings again when vessel position has changed by more than 60 miles or more than 1 degree while the power was OFF. See pgs 9 ~ 10 for details.

Push [POWER] to turn power ON.

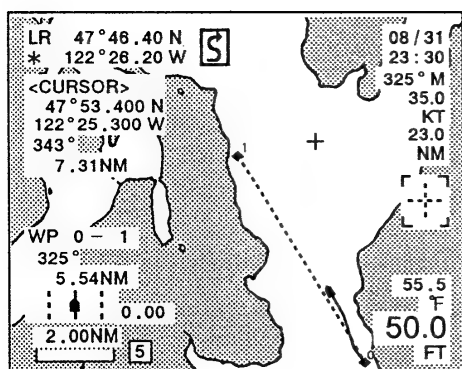
- See p. 6 for details.
- Either the plotter mode, sounder mode, or combination mode screen will appear depending on what screen was selected before the power was turned OFF.



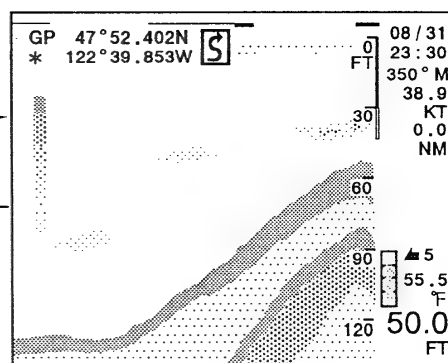
Power ON



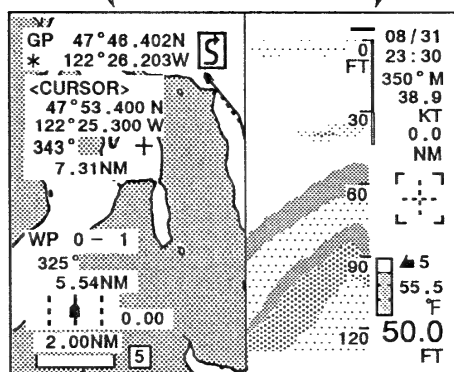
Opening display



Plotter mode

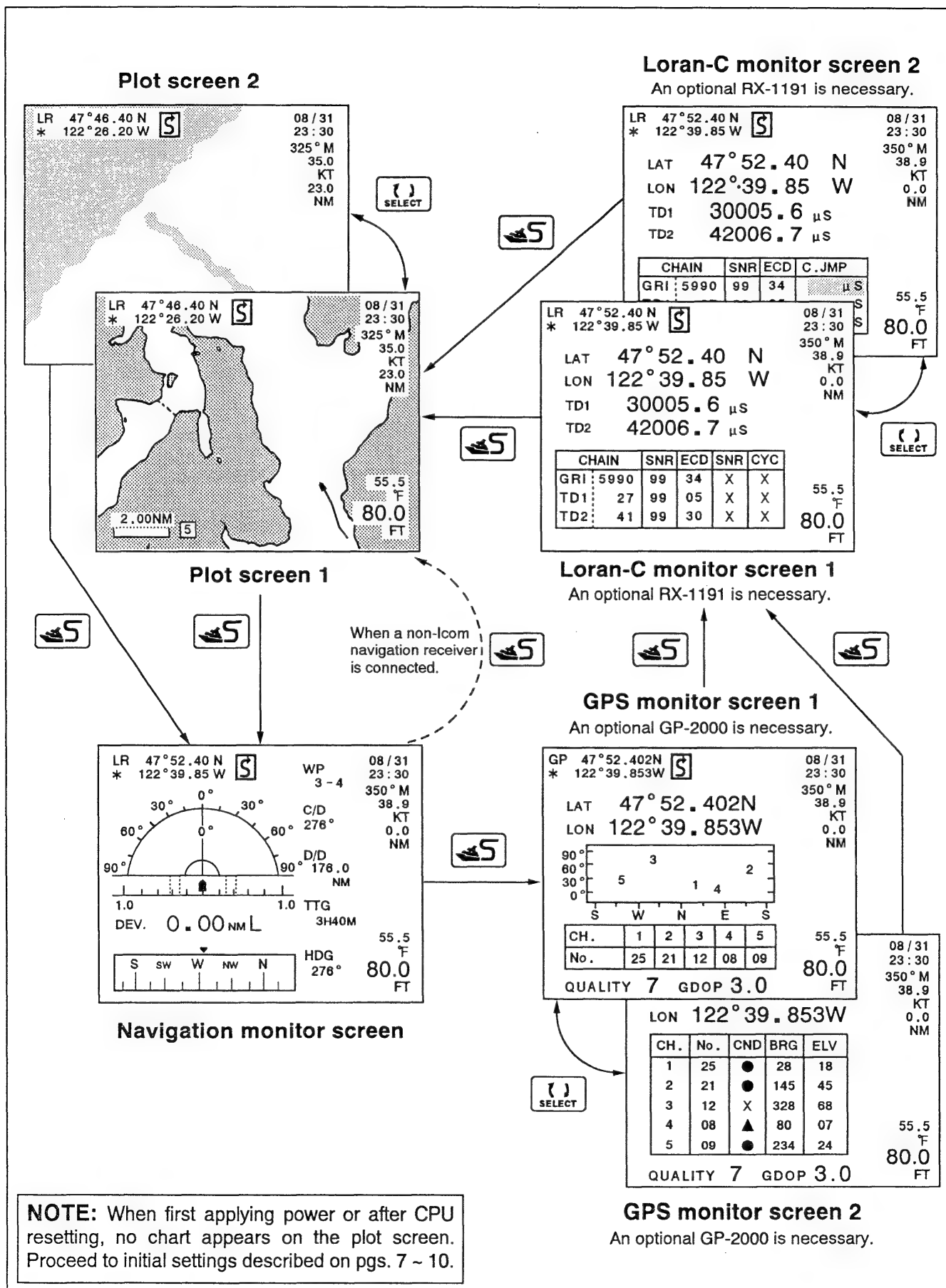


Sounder mode

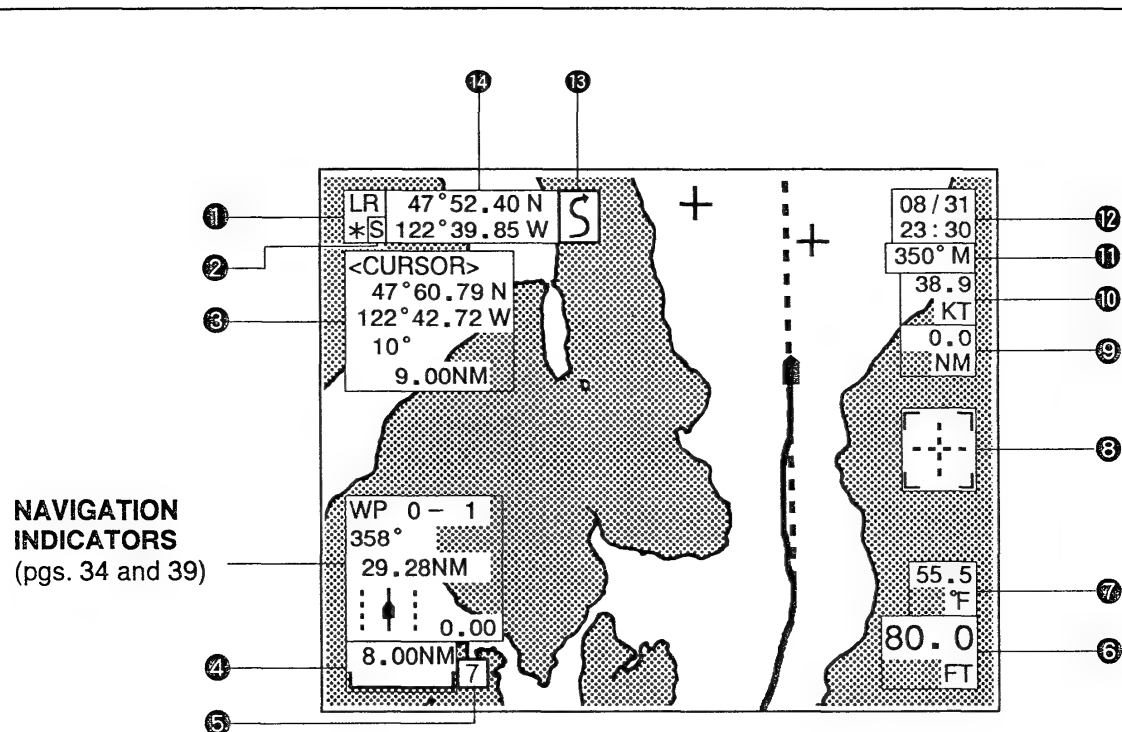


Combination mode

Plotter mode



Plot screen



1 NAVIGATION RECEIVER INDICATOR (p. 20)

Displays navigation receiver being used.

- “*” shows that dual watch is being used.

2 POSITIONING DATA ERROR INDICATOR

“S” or “S.ERR” appears when the positioning equipment sends error signals.

“R” or “R.ERR” appears when the FP-601 cannot receive positioning data for more than 10 sec.

3 CURSOR POSITION READOUT

Appears when using a cursor. Shows cursor position in Lat/Lon and bearing/distance from your vessel when the cursor is ON.

4 CHART SCALE READOUT (p. 21)

Shows the chart scale or distance.

5 CHART SCALE NUMBER (p. 17)

Shows the chart scale in 10 steps, “0” ~ “9.” “0” is the highest magnification.

6 WATER DEPTH READOUT

Shows the water depth.

7 WATER TEMPERATURE READOUT

Shows the water temperature.

- When using the EX-1010 or the EX-983. (p. 88)

8 CONDITION INDICATOR (p. v)

Shows the condition. See p. v for details.

9 TRIP LOG READOUT (p. 70)

Shows the trip log.

10 VESSEL SPEED READOUT (p. 71)

Shows the vessel speed.

11 HEADING READOUT (p. 71)

Shows the vessel heading.

- “MAG” or “M” also appears when magnetic bearing is selected.

12 DATE/TIME READOUT (p. 7)

Shows date and time.

- These values are set in the set mode.

13 TRACK ON INDICATOR (p. 23)

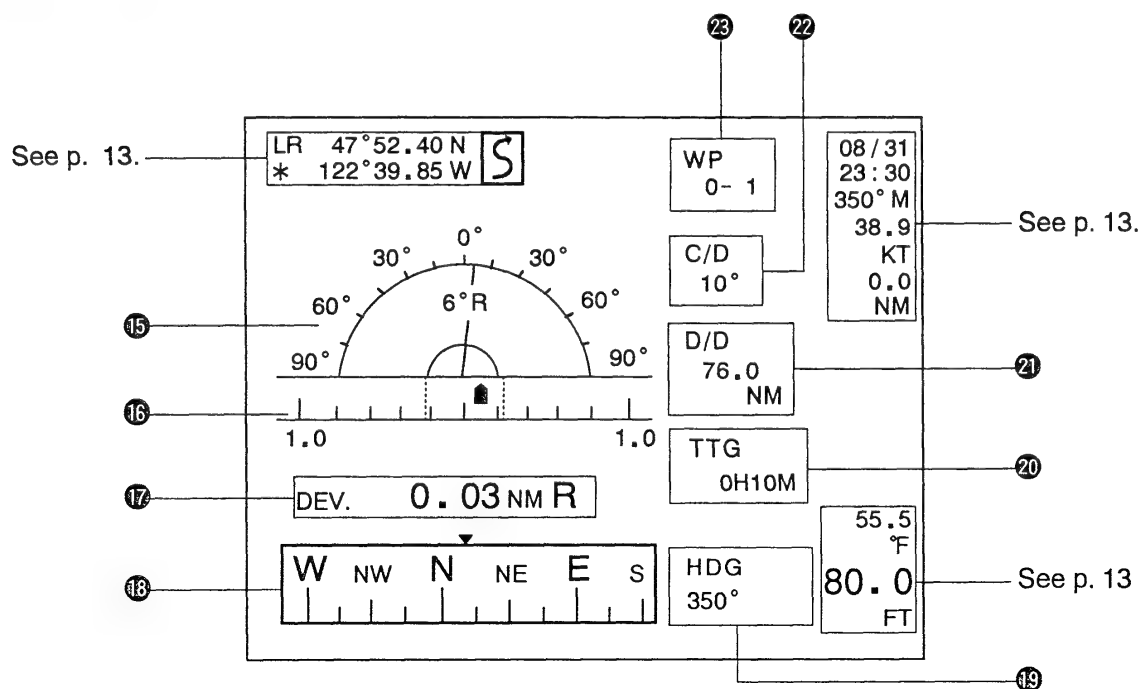
Appears when the track function is activated.

14 VESSEL POSITION READOUT (p. 20)

Shows your vessel position in Lat/Lon or TD.

Navigation monitor screen

Almost no indicators and readouts will be displayed when all navigation functions are OFF.



15 COURSE INDICATOR

Shows the course direction to the target waypoint graphically.

16 COURSE DEVIATION INDICATOR

Shows alarm range from the selected navigation course.

- The green dotted lines show the course out alarm range.
- The red dotted lines show the course in alarm.
- When the course out and course in alarms are set to the same range, only yellow lines appear.

17 COURSE DEVIATION READOUT

Shows distance from the selected navigation course.

18 COMPASS

Shows your vessel heading graphically.

19 HEADING READOUT (p. 71)

Shows the vessel heading.

- The same value as "Heading readout" (11 on p. 13).

20 TTG (TIME TO GO) READOUT

Shows the expected time to the target waypoint.

21 D/D (DISTANCE TO DESTINATION) READOUT

Shows the distance to the target waypoint.

22 C/D (COURSE TO DESTINATION) READOUT

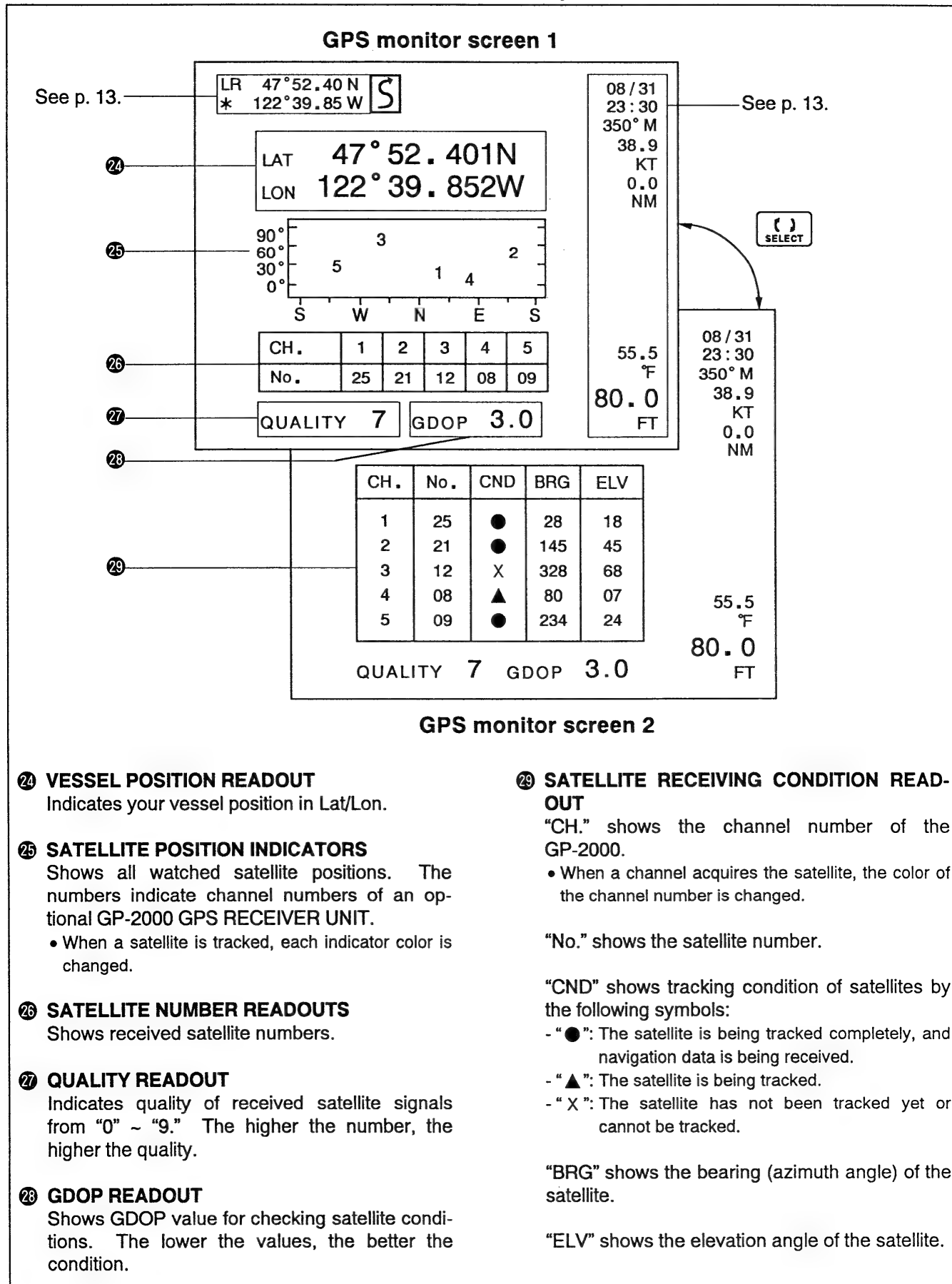
Shows the direction to the target waypoint.

23 WAYPOINT READOUT

Shows the course. (e.g. 0-1 shows that the selected course is from waypoint 0 to waypoint 1.)

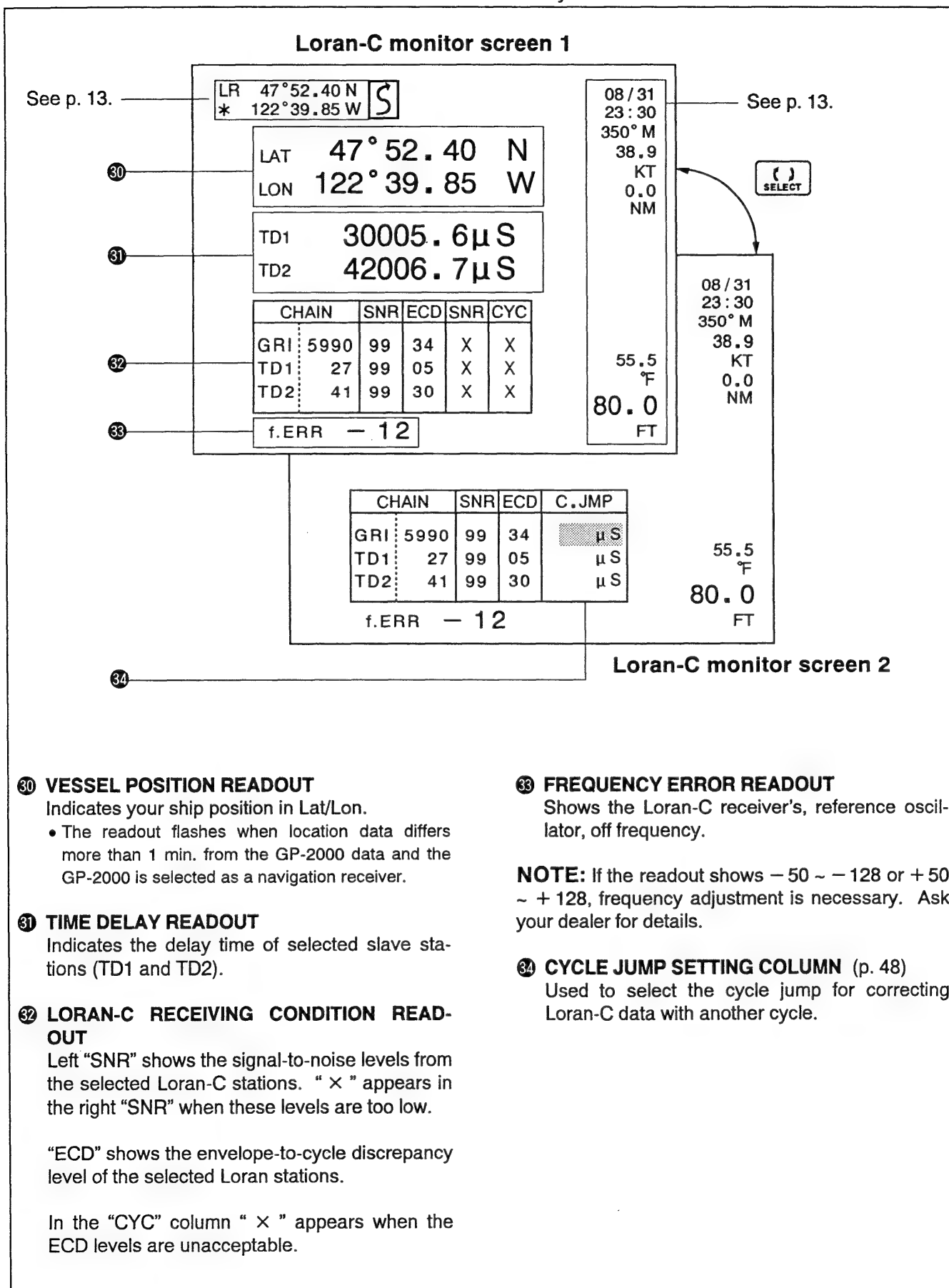
GPS monitor screens

To select this screen, an optional GP-2000 is necessary.



Loran-C monitor screens

To select this screen, an optional RX-1191 is necessary.



3-2 Chart operation

■ Changing the chart scale

The FP-601 has interchangeable plot screens, plot screen 1 and 2, enabling major changes in chart scale at the touch of a key.

KEY	FUNCTION
⏏	Magnifies the chart scale.
⏏	Reduces the chart scale.
SELECT	Exchanges plot screen 1 and 2.

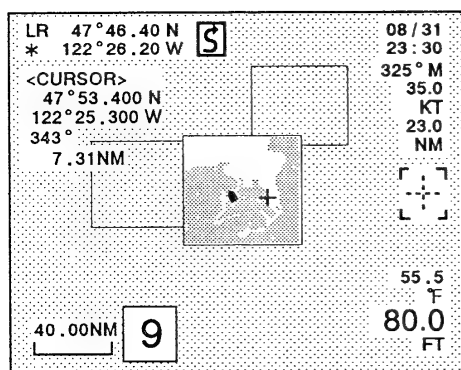
WHEN THE CURSOR IS DISPLAYED:

When the chart is magnified or reduced, the chart is shifted to indicate the cursor position in the center.

WHEN THE CURSOR IS NOT DISPLAYED:

When the chart is magnified or reduced, the chart is shifted to indicate the vessel position in the center.

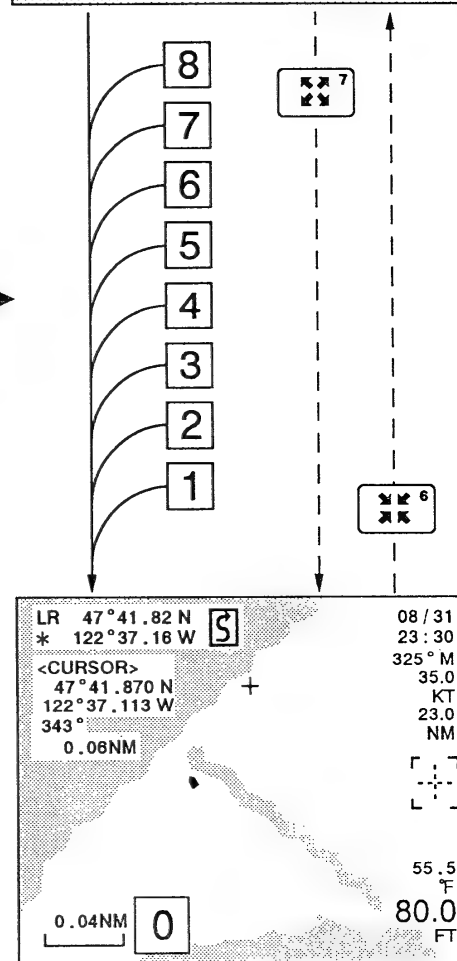
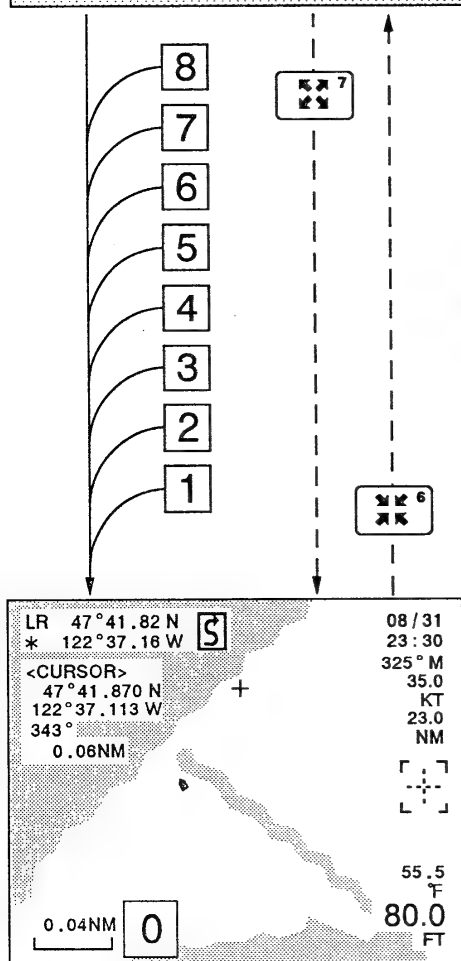
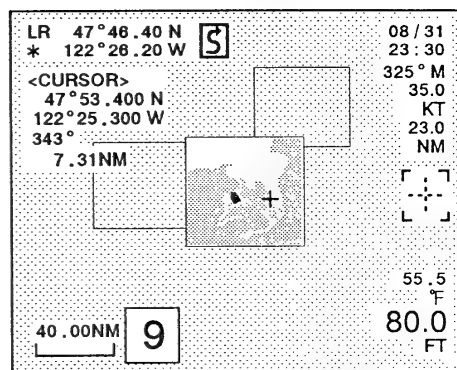
PLOT SCREEN 1



When chart scale "9" is selected, other charts' frames may appear depending on the inserted ROM card.

In this case, you can select another chart manually with the cursor and [CENTER] key.

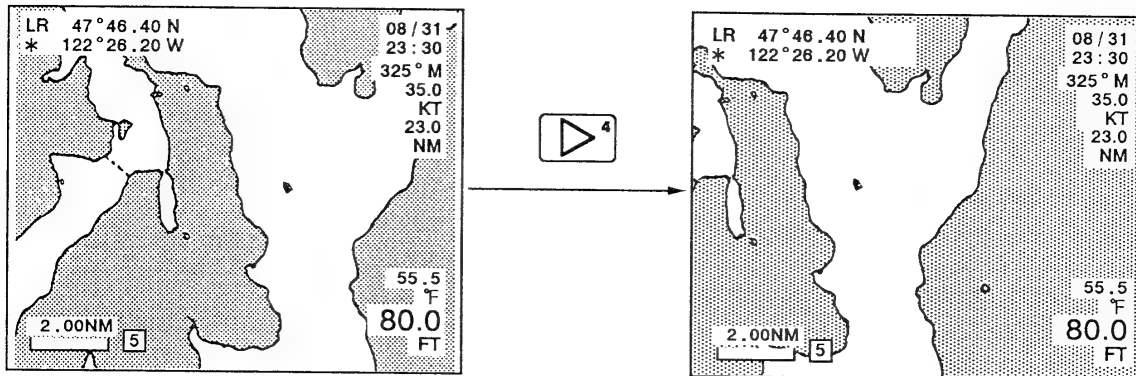
PLOT SCREEN 2



■ Moving the chart

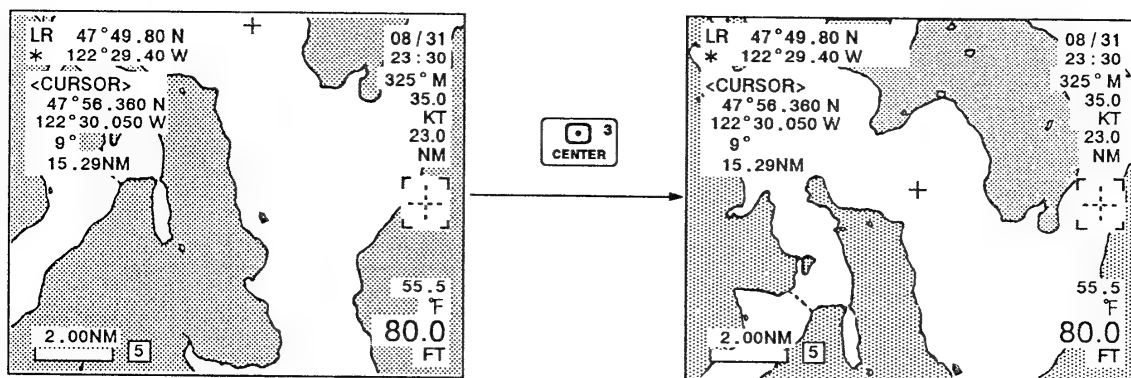
The displayed chart can be shifted to view a desired area. Select one of the following methods: (If the ROM card has more than 1 chart, the next chart is automatically selected when your vessel goes beyond the displayed chart.)

- ① When the cursor is OFF, push [△]/[▽]/[◀]/[▶] to shift the displayed chart.



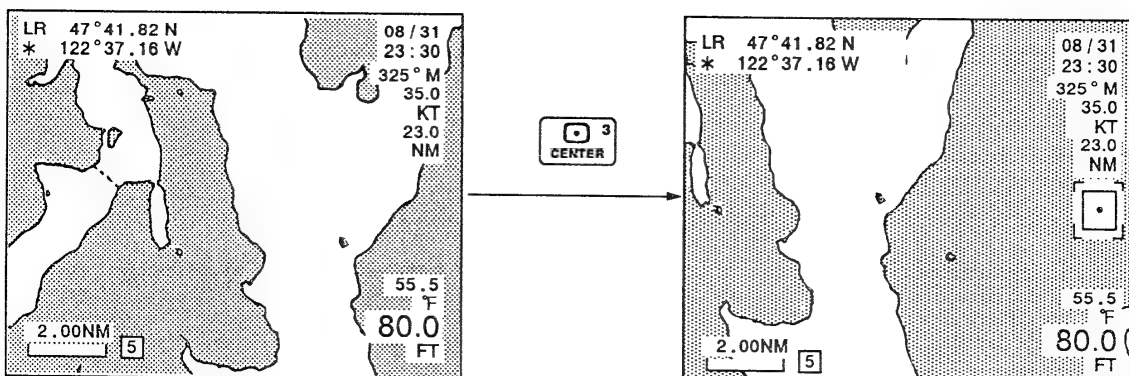
- ② When the cursor is ON, set the cursor position to your desired centering position, and then push [CENTER].

- The chart is shifted to indicate the cursor position in the center.
- [⌂] and [⌂] also shift the chart.



- ③ When the cursor is OFF, push [CENTER] to activate the center function.

- “⊙” appears.
- The chart will move with the vessel position always remaining in the center.
- To turn OFF the center function, push [CENTER] again.



Memorizing a chart into the FP-601 memory

Once the chart is memorized into the FP-601, the chart is backed up and is displayed on a screen

even if the ROM card is pulled out.

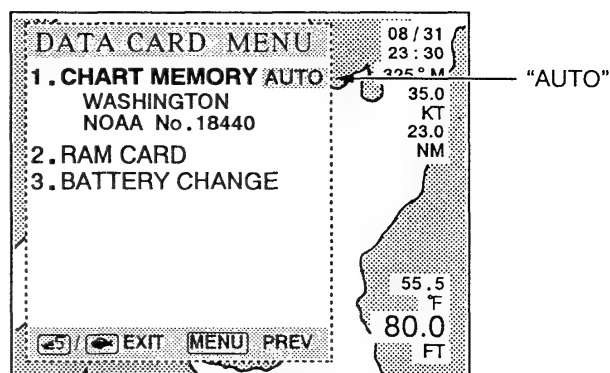
• Auto memorization

When a new chart is selected on a plot screen, the chart is automatically memorized into the FP-601 memory.

- 1) Push [MENU] to select the menu mode.
- 2) Select "DATA CARD" by rotating the dial; then, push [SET].
 - Pushing [7] also performs this function.
 - The data card menu window appears.
- 3) Select "CHART MEMORY" by rotating the dial; then, push [SET].
 - Pushing [1] also performs this function.
 - "CHART MEMORY" turns green.

- 4) Rotate the dial to select "AUTO"; then, push [SET].
 - Auto memorization is selected.

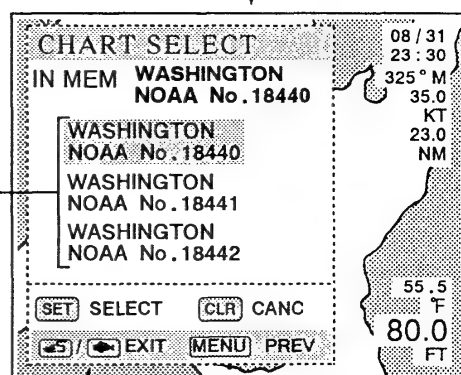
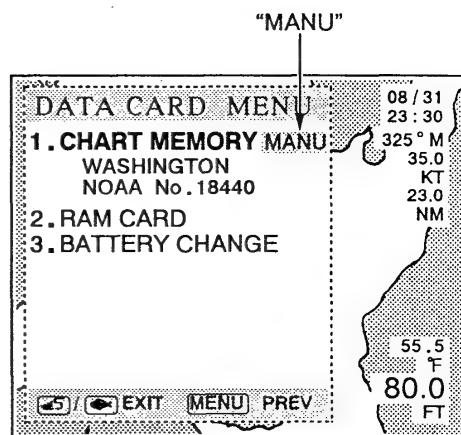
- 5) Push [←5] or [←] to exit the menu mode.



• Manual memorization

Even when a new chart is selected on a plot screen, the chart is not memorized into the FP-601 memory. Memorization in the menu mode is necessary.

- 1) Push [MENU] to select the menu mode.
- 2) Select "DATA CARD" by rotating the dial; then, push [SET].
 - Pushing [7] also performs this function.
 - The data card menu window appears.
- 3) Make sure the ROM card is inserted.
 - If it is not inserted, insert it into the card slot.
- 4) Select "CHART MEMORY" by rotating the dial; then, push [SET].
 - Pushing [1] also performs this function.
 - "CHART MEMORY" turns green.
- 5) Rotate the dial to select "MANU"; then, push [SET].
 - Manual memorization is selected and the chart select window appears.
- 6) Rotate the dial to select the desired chart; then push [SET].
 - "CHART MEMORY" turns yellow and the selected chart is memorized in the FP-601 memory.
- 7) Push [←5] or [←] to exit the menu mode.



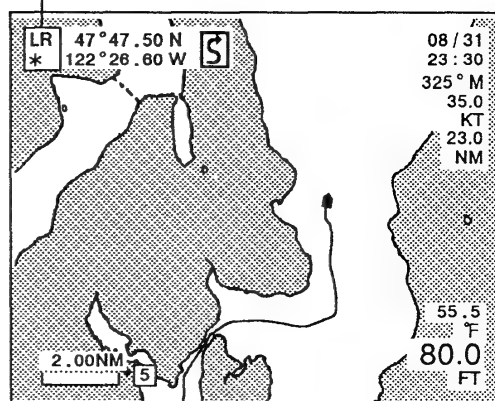
The chart names in the inserted ROM card appear.

■ Selecting the navigation receiver

When more than one navigation receiver, such as both the GP-2000 and RX-1191, are connected to the FP-601, you can designate which data to display or select dual watch navigation.

- 1) Push [SET].
 - "GP," "LR" or "EX" for navigation receiver indicator turns green.
- 2) Rotate the dial to select the desired navigation receiver for data.
 - "LR" shows that data from the RX-1191 is adopted.
 - "GP" shows that data from the GP-2000 is adopted.
 - "EX" shows that data from other navigation equipment is adopted.
 - "*" shows that dual watch navigation is activated.
- 3) Push [SET] three times.

Navigation receiver indicator



DUAL WATCH NAVIGATION

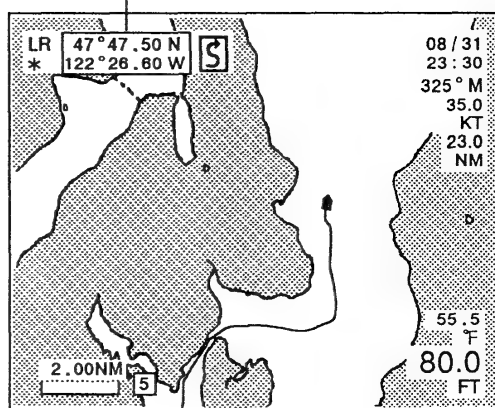
The navigation receiver, the GP-2000 or RX-1191, is automatically designated depending on the GPS/Loran-C priority (p. 72). When data from the high priority navigation receiver is interrupted, the low priority navigation receiver is selected. If the data from both the GP-2000 and RX-1191 are interrupted, the external navigation receiver is selected.

■ Selecting the position data

You can select the data for vessel position from Lat/Lon indication or TD (time delay) indication when an optional RX-1191 LORAN-C RECEIVER UNIT is connected.

- 1) Push [SET] twice.
 - Position indication turns green.
- 2) Rotate the dial to select the desired data for position indication.
- 3) Push [SET] twice.

Position readout



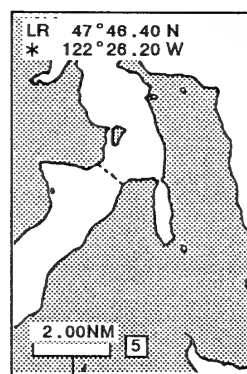
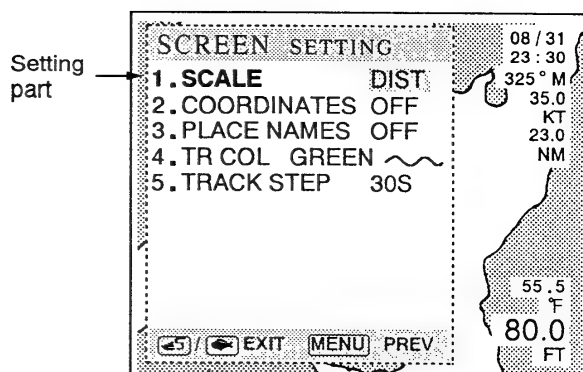
NOTE: Even when GPS data is adopted as a positioning data source, TD indication can be selected. In this case TD is indicated in cyan and if TD data differ by more than 1 min. from the RX-1191 data, the readout flashes.

Various indications

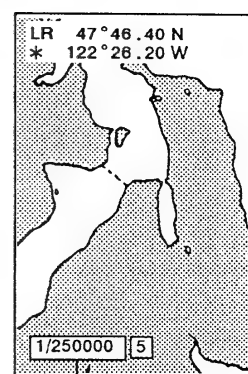
• Scale/distance indication key

The scale or distance indication can be selected for your convenience.

- 1) Push [MENU] to select the menu mode.
- 2) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 3) Select "SCREEN SETTING" by rotating the dial; then, push [SET].
 - Pushing [8] also performs this function.
 - The screen setting window appears.
- 4) Select "SCALE" by rotating the dial; then, push [SET].
 - Pushing [1] also performs this function.
 - "SCALE" turns green.
- 5) Rotate the dial to select "DIST" for distance indication or "SCALE" for scale indication; then, push [SET].
 - "SCALE" turns yellow.
- 6) Push [←5] or [←6] to exit the menu mode.



Distance indication key

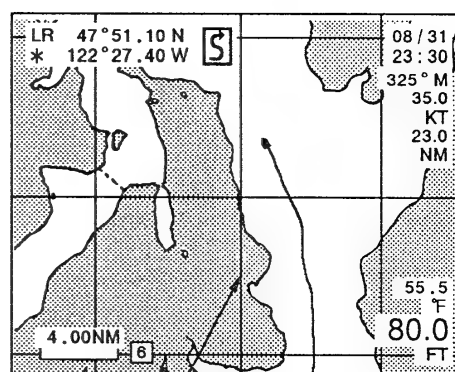


Scale indication key

• Coordinates indication

The coordinates indication can be turned ON or OFF for your convenience.

- 1) Push [MENU] to select the menu mode.
- 2) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 3) Select "SCREEN SETTING" by rotating the dial; then, push [SET].
 - Pushing [8] also performs this function.
 - The screen setting window appears.
- 4) Select "COORDINATES" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - "COORDINATES" turns green.
- 5) Rotate the dial to select "ON" or "OFF"; then, push [SET].
 - "COORDINATES" turns yellow.
- 6) Push [←5] or [←6] to exit the menu mode.





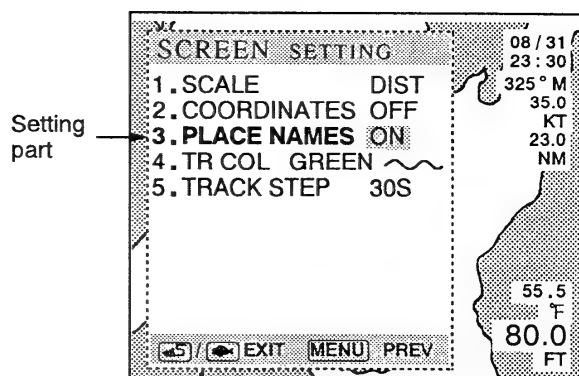
Coordinates

CHART SCALE		UNIT OF COORDINATES
[9]	[8]	1 degree
[7]	[6] [5]	10 minutes
[4]	[3] [2]	1 minute
[1]	[0]	1/10 minute

• Place name indication

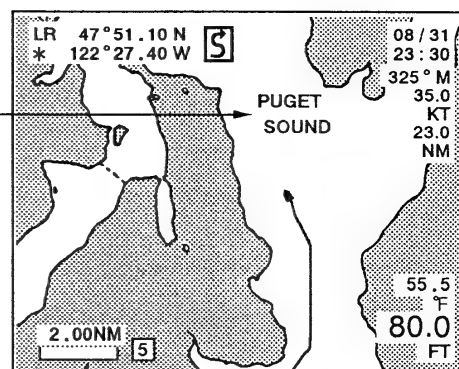
The place name can be displayed for your convenience.

- 1) Push [MENU] to select the menu mode.
- 2) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 3) Select "SCREEN SETTING" by rotating dial; then, push [SET].
 - Pushing [8] also performs this function.
 - The screen setting window appears.
- 4) Select "PLACE NAMES" by rotating the dial; then, push [SET].
 - Pushing [3] also performs this function.
 - "PLACE NAMES" turns green.
- 5) Rotate the dial to select "ON" or "OFF," then push [SET].
 - "PLACE NAMES" turns yellow.
- 6) Push [] or [] to exit the menu mode.



Setting part

Place name











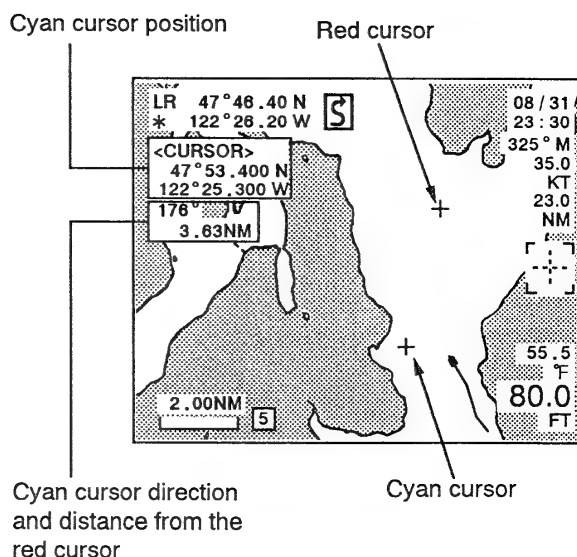
Place name "ON"

PLOTTER

Distance measurement

The distance from your ship to the cursor position is indicated on the plot screen continuously when the cursor is ON. Moreover, you can measure the distance and direction from one point to another point on the plot screen.

- 1) Push [CURSOR] to turn the cursor ON.
- 2) Set the cursor to the point you wish to measure from with []/[]/[]/[].
- 3) Push and hold [CURSOR] for 2 sec.
 - A single beep sounds and a red cursor appears.
- 4) Move the cyan cursor to desired points with []/[]/[]/[].
 - The direction and distance from the red cursor are indicated in red.
- 5) Push [CURSOR] to end the distance measurement.



3 PLOTTER OPERATION

3-3 Track operation

When you are cruising, the vessel track can be displayed in your favorite color. Vessel position is marked at certain intervals, and the plotter draws a line between the points.

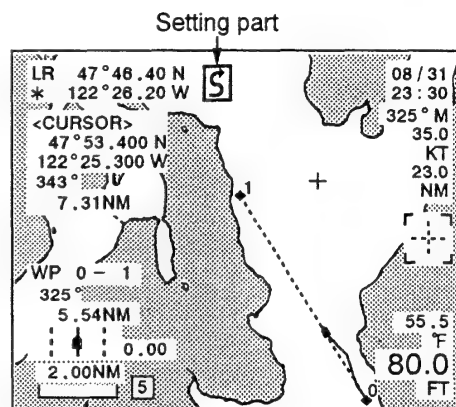
The track is drawn in up to 1200 points. When the maximum has been reached, the points of the old track are erased.

■ Track indication

• Track indication ON/OFF

Track indication can be turned ON or OFF for your convenience.

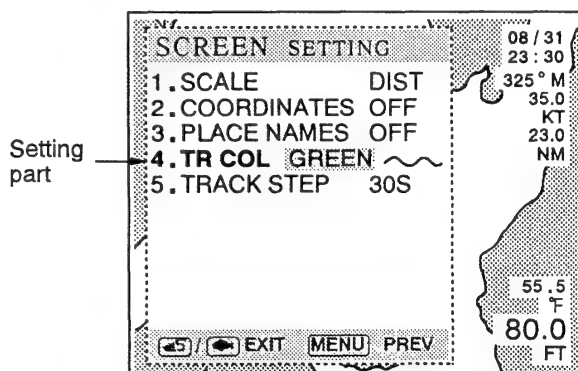
- 1) Push [SET] 3 times.
 - The track ON indicator or the indicator frame turns green.
- 2) Rotate the dial to select ON or OFF.
 - “S” appears when track indication is ON
 - “S” disappears when track indication is OFF.
- 3) Push [SET] to exit the setting condition.



■ Track color selection

Your favorite track color can be selected from 7 different colors.

- 1) Push [MENU] to select the menu mode.
- 2) Select “PLOTTER” by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 3) Select “SCREEN SETTING” by rotating the dial; then, push [SET].
 - Pushing [8] also performs this function.
 - The screen setting window appears.
- 4) Select “TR COL” by rotating the dial; then, push [SET].
 - Pushing [4] also performs this function.
 - “TR COL” turns green.
- 5) Rotate the dial to select the desired track color.
- 6) Push [SET] to set the color.
 - “TR COL” turns yellow.
- 7) Push [←5] or [→5] to exit the menu mode.



TRACK COLORS AVAILABLE

- | | |
|----------|-----------|
| • Red | • Magenta |
| • Green | • Cyan |
| • Yellow | • White |
| • Blue | |

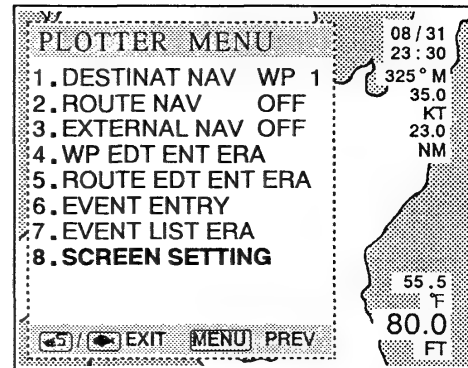
NOTE: Even when the color is changed, the track color already drawn will not change. Only the subsequent tracks will change color.

■ Plotting interval

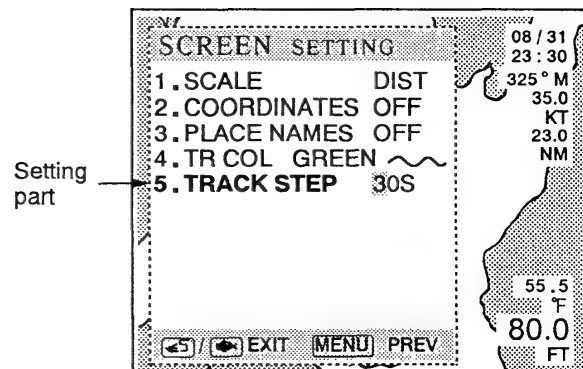
The intervals along the track can be selected to fit your cruising style.

- 1) Push [MENU] to select the menu mode.
- 2) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears:
- 3) Select "SCREEN SETTING" by rotating the dial; then, push [SET].
 - Pushing [8] also performs this function.
 - The screen setting window appears.
- 4) Select "TRACK STEP" by rotating the dial; then, push [SET].
 - Pushing [5] also performs this function.
 - "TRACK STEP" turns green.
- 5) Select time or distance as an interval method and select the first digit of the step unit by rotating the dial.
 - The selected time or distance step appears.
- 6) Enter the desired value with the digit keys.
 - The time unit, "S" for second or "MIN" for minute, is changed with the [SELECT] key.
- 7) Push [SET] to set the value.
 - "TRACK STEP" turns yellow.
- 8) Push [←5] or [→5] to exit the menu mode.

INTERVAL METHOD		DESCRIPTION
TIME	DISTANCE	
5 sec.	0.01 NM	Detailed track can be drawn.
60 min.	9.99 NM	Long track can be drawn.



PLOTTER

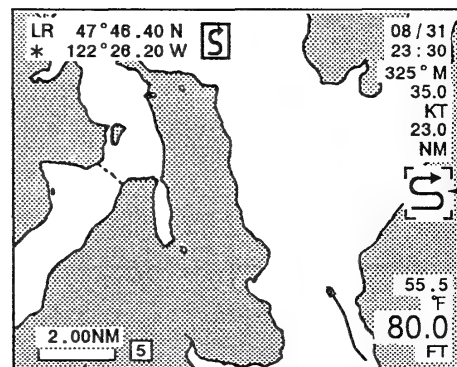


■ Erasing the track

The displayed track can be erased by pushing and holding [CLR] for more than 3 sec.

- A short beep sounds several times; then, a long beep sounds and the track is erased.

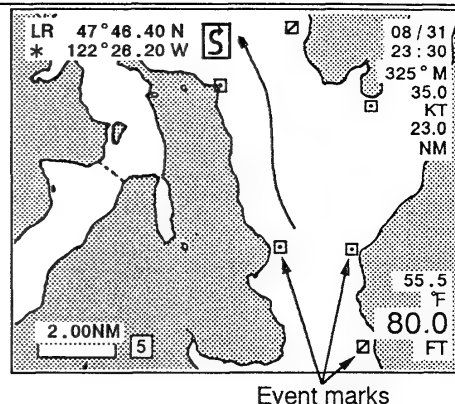
NOTE: When track erasing is performed, all track are erased regardless of the track color.



3-4 Event mark

Event marks memorize desired reference positions on the chart. 6 colors can be used to distinguish, good fishing points, shallow areas, reefs, light-houses, etc. 2 types of event marks are programmed into the FP-601 as follows:

TYPE	FIGURE	NUMBER	DATA
EVENT 1		100	Yes
EVENT 2		500	No



■ Programming event marks

There are 2 methods for programming event marks.

- Programming on the plot screen
- Programming in the plotter menu

• Programming on the plot screen

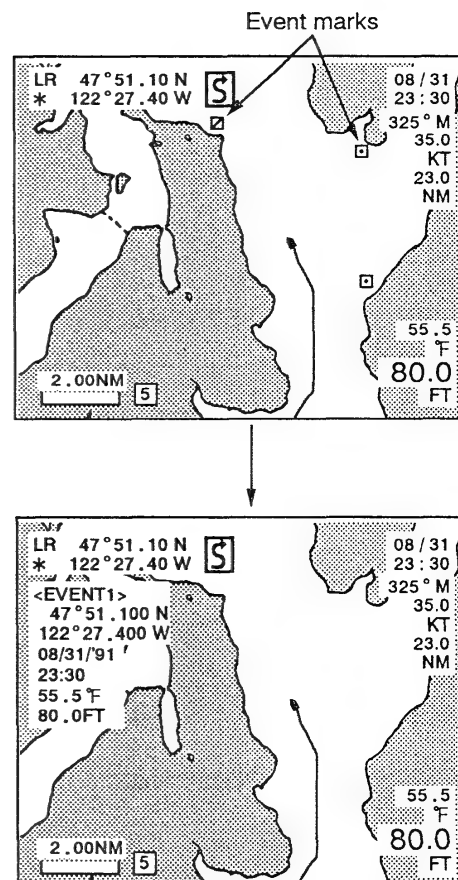
You can program an event mark at your vessel position or the cursor position.

When programming an event type 1 at your vessel position, date, time, water temperature* and water depth are programmed with Lat/Lon.

*An optional temperature sensor is necessary.

- 1) When programming an event mark at the cursor position, push [CURSOR] to turn the cursor ON; then, set the cursor at the desired position with [Δ]/[∇]/[\triangleleft]/[\triangleright].
 - Skip this step when programming an event mark at your vessel position.
- 2) Push [M].
 - "EVENT1" or "EVENT2" appears.
- 3) Push [SELECT] to select the event type.
 - "EVENT1" for event type 1 and "EVENT2" for event type 2 appear alternately.
 - To cancel the programming push [CLR].
- 4) Rotate the dial to select a color for the event mark.
- 5) Push [SET] to program the event mark.
 - Programming is complete.

[SCREEN EXAMPLE FOR PROGRAMMING AT YOUR VESSEL POSITION]



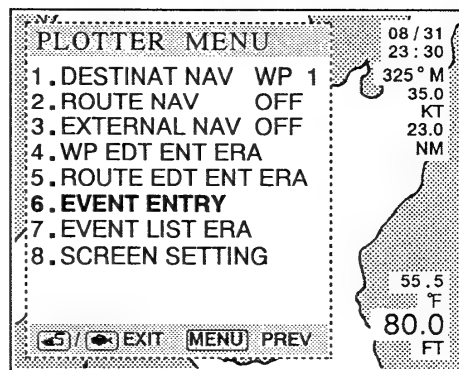
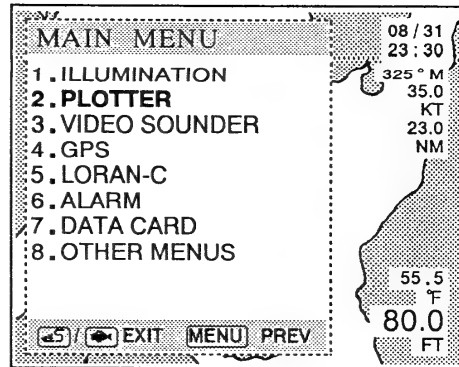
• Programming in the plotter menu

Event marks can be programmed anywhere you want by directly entering latitude and longitude.

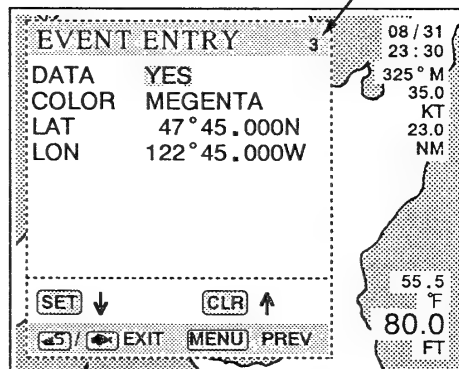
- 1) Push [MENU] to select the menu mode.
- 2) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 3) Select "EVENT ENTRY" by rotating the dial; then, push [SET].
 - Pushing [6] also performs this function.
 - The event entry window appears and "DATA" turns green.
- 4) Rotate the dial to select "YES" for event type 1 or "NO" for event type 2; then, push [SET].
 - "COLOR" turns green.
- 5) Rotate the dial to select a color for the event mark; then, push [SET].
 - "LAT" turns green.
- 6) Rotate the dial to select the first digit of latitude and enter the latitude with the digit keys, then push [SET].
 - The direction, N for north or S for south, is changed with the [SELECT] key.
 - "LON" turns green.
- 7) Rotate the dial to select the first digit of longitude and enter the longitude with the digit keys, then push [SET].
 - The direction, E for east or W for west, is changed with the [SELECT] key.
 - The programming is complete and other event programming is automatically started. If you want to program other events, repeat steps 3 ~ 7.
- 8) Push [←S] or [←] to exit the menu mode.

NOTE 1: It is impossible to program an event mark with latitude and longitude the same as an event mark previously programmed. An error message appears with a beep if this is attempted.

NOTE 2: If you attempt to program more than 100 event marks for event type 1 or more than 500 for event type 2, error messages appear with a beep.



Number of stored event marks. (Separate number appears depending on the selected type.)



Event entry window
(for event type 1)

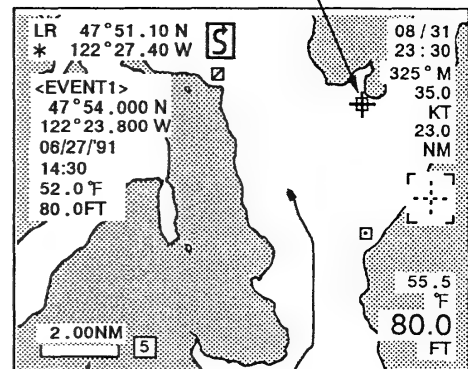
■ Erasing event marks or changing event type and color

Unnecessary event marks can be cleared, moreover, event type and color can be changed.

• Erasing the event mark

- 1) Push [CURSOR] to turn the cursor ON.
- 2) Set the cursor on the event mark to be cleared with [Δ]/[∇]/[\triangleleft]/[\triangleright].
- 3) Push [\mathcal{P}].
 - Programmed event type is indicated in the programmed color; latitude and longitude are indicated in white.
- 4) Push [CLR].
 - The event mark is erased.
- 5) Push [CURSOR] to turn the cursor OFF.

Set the cursor on the event mark to be cleared.



NOTE: Event mark erasing can be performed in the menu mode. See the box on the next page for details.

• Changing event color

- 1) Push [CURSOR] to turn the cursor ON.
- 2) Set the cursor on the event mark to be changed with [Δ]/[∇]/[\triangleleft]/[\triangleright].
- 3) Push [\mathcal{P}].
 - Programmed event type is indicated in the programmed color; latitude and longitude are indicated in white.
- 4) Rotate the dial to change the color; then, push [SET].
- 5) Push [CURSOR] to turn the cursor OFF.



• Changing event type

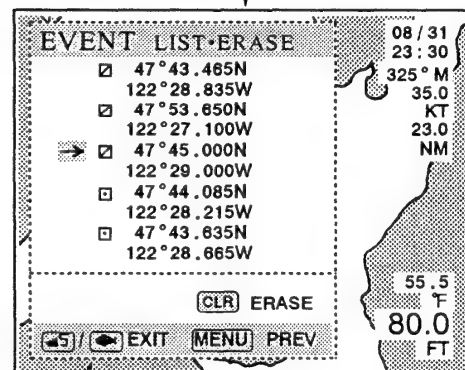
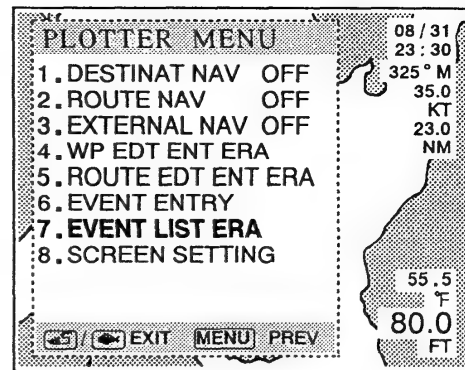
- 1) Push [CURSOR] to turn the cursor ON.
- 2) Set the cursor on the event mark to be changed with [Δ]/[∇]/[\triangleleft]/[\triangleright].
- 3) Push [\mathcal{P}].
 - Programmed event type is indicated in the programmed color; latitude and longitude are indicated in white.
- 4) Push [SELECT] to change the type; then, push [SET].
- 5) Push [CURSOR] to turn the cursor OFF.

■ Listing-up event marks

• Event mark listing-up

Event marks are listed in the menu mode, and can be displayed easily. Event mark erasing can also be performed on the list.



- 1) Push [MENU] to select the menu mode.
- 2) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 3) Select "EVENT LIST ERA" by rotating the dial; then, push [SET].
 - Pushing [7] also performs this function.
 - Event list window appears.
- 4) Rotate the dial to scroll the list.
 - To erase the event mark, see the box below.
- 5) Push [] or [] to exit the menu mode.

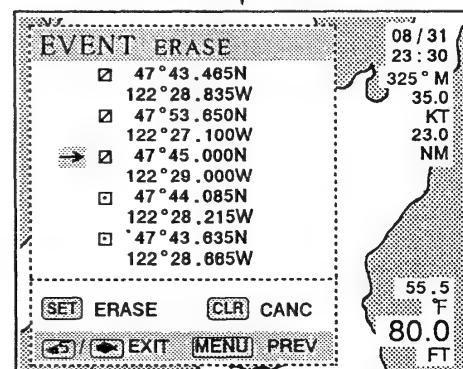
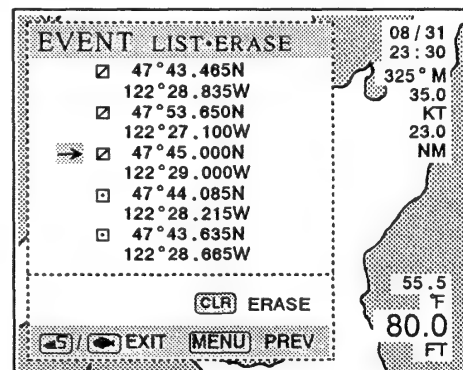


PLOTTER

• Erasing

Event mark erasing can also be performed in the plotter menu. Note that simultaneous erasing of all event marks can only be performed in the event list window.

- 1) Push [MENU] to select the menu mode.
- 2) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 3) Select "EVENT LIST ERA" by rotating the dial; then, push [SET].
 - Pushing [7] also performs this function.
 - Event list window appears.
- 4) Rotate the dial to select the event number to be erased or push and hold [CLR] for all event erasing, then push [CLR].
 - "ALL EVENTS ERASE" appears when [CLR] is pushed and held.
- 5) Push [SET] to erase the event.
 - To cancel erase, push [CLR].
- 6) Push [] or [] to exit the menu mode.



3-5 Navigation function

■ Function description

The navigation function allows you to lead your vessel to a destination (waypoint) or along a desired route using the navigation indicators. The FP-601 shows your preset route, course error, distance, and direction on the screen.

This function allows you to ignore tidal currents and winds during cruising. The FP-601 has 3 navigating functions as follows:

- Destination navigation
- Route navigation
- External navigation

Before activating destination or route navigation, waypoints must be programmed.

■ Programming waypoints

A waypoint is used as a destination in destination navigation. Waypoints are also used as relay points and destinations in route navigation. Up to 99 waypoints (waypoint numbers 1 ~ 99) can be programmed in the FP-601.

Waypoint number "0" is your vessel position.

There are 2 methods for programming the waypoints.

- Programming on the plot screen
- Programming in the plotter menu.

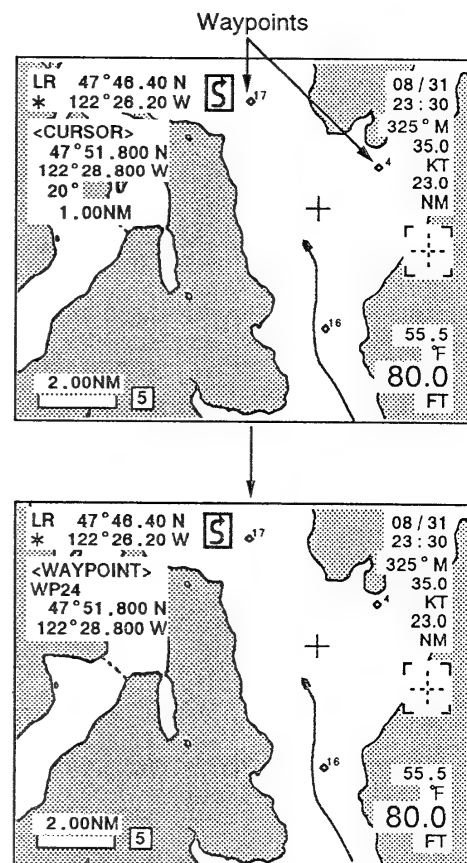
NOTE: While a navigation function such as destination navigation is activated, waypoints cannot be programmed.

• Programming on the plot screen

You can program a waypoint at your vessel position or the cursor position.

- 1) When destination navigation or route navigation is activated, turn the function OFF. (pgs. 35, 36, 40)
- 2) When programming a waypoint at the cursor position, push [CURSOR] to turn the cursor ON; then, set the cursor at the desired position with the [Δ][▽][◀][▶].
 - Skip this step when programming a waypoint at your vessel position.
- 3) Push [⏏] twice.
 - "WAYPOINT" and waypoint number appear.
- 4) Rotate the dial to select a waypoint number.
 - Waypoint numbers already programmed cannot be selected.
- 5) Push [SET].
 - Waypoint programming is complete.

[SCREEN EXAMPLE FOR PROGRAMMING AT THE CURSOR POSITION]

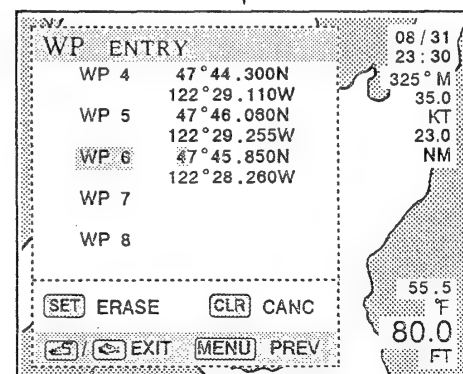
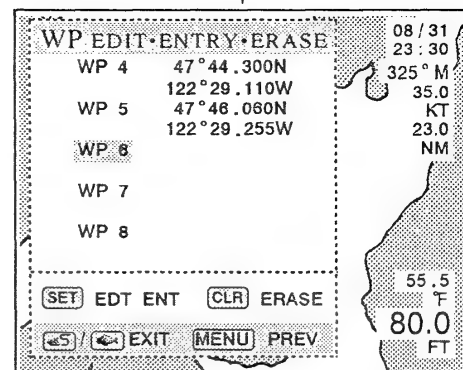
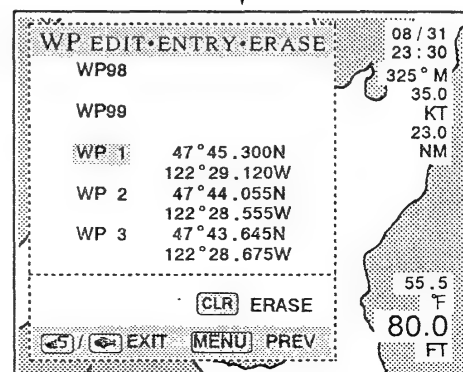
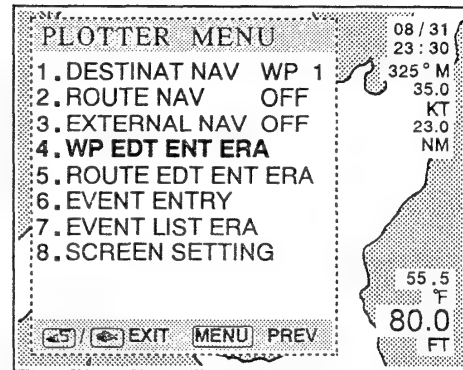


• Programming in the plotter menu

Waypoints can be programmed anywhere you want by entering latitude and longitude directly.

- 1) When destination navigation or route navigation is activated, turn the function OFF. (pgs. 35, 36, 40)
- 2) Push [MENU] to select the menu mode.
- 3) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 4) Select "WP EDT ENT ERA" by rotating the dial; then, push [SET].
 - Pushing [4] also performs this function.
 - The waypoint edit window appears.
 - If "WP EDT ENT ERA" is displayed in cyan, the destination or route navigation function has been activated. Turn the function OFF.
- 5) Rotate the dial to select a waypoint number to be programmed.
 - The waypoint numbers followed by lat/lon data have already been programmed.
- 6) Push [SET].
 - The present vessel location appears when the cursor is OFF.
 - The cursor position appears when the cursor is ON.
- 7) Enter the latitude of the waypoint with the digit keys, then push [SET].
 - The direction, N for north or S for south, is changed with the [SELECT] key.
- 8) Enter the longitude of the waypoint with the digit keys, then push [SET].
 - The direction, E for east or W for west, is changed with the [SELECT] key.
- 9) When programming more than one waypoint, repeat steps 5 ~ 8.
- 10) Push [5] or [FISH] to exit the menu mode.

NOTE: Programming a waypoint with latitude and longitude the same as a previously programmed waypoint is not possible. An error message appears with a beep if this is attempted.



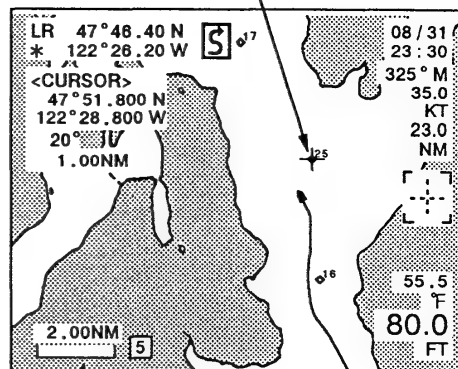
PLOTTER

Erasing waypoints

• Erasing on the plot screen.

- 1) When destination navigation or route navigation is activated, turn the function OFF. (pgs. 35, 36, 40)
- 2) Push [CURSOR] to turn the cursor ON.
- 3) Set the cursor on the waypoint to be cleared with [Δ]/[∇]/[\triangleleft]/[\triangleright].
- 4) Push [\square/\diamond] twice.
 - "WAYPOINT" and waypoint information appear.
- 5) Push [CLR] to erase the waypoint.
 - If the error indicator appears with a low beep, the waypoint may already be programmed into a route. In this case, erase the route before erasing the waypoint. See p. 37 for erasing route details.
- 6) Push [CURSOR] to turn the cursor OFF.

Set the cursor to the waypoint to be cleared.



• Erasing in the plotter menu.

- 1) When destination navigation or route navigation is activated, turn the function OFF. (pgs. 35, 36, 40)
- 2) Push [MENU] to select the menu mode.
- 3) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 4) Select "WP EDT ENT ERA" by rotating the dial; then, push [SET].
 - Pushing [4] also performs this function.
 - The waypoint edit window appears.
 - If "WP EDT ENT ERA" is displayed in cyan, the destination or route navigation function has been activated. Turn the function OFF.
- 5) Rotate the dial to select the white waypoint number to be erased.
- 6) Push [CLR].
 - The cyan-data waypoints cannot be erased because they have been programmed into routes. To erase the cyan-data waypoints, first erase the route which contains the waypoints. (p. 37)
 - To cancel erasing, push [CLR] again.
- 7) Push [SET] to erase.
 - Waypoint erasing is complete.

• Erasing all waypoints

An all waypoints erasing command can be activated in the plotter menu under the following conditions.

- All navigation functions are OFF.
- 2 or more waypoints have been programmed.
- No route has been programmed.

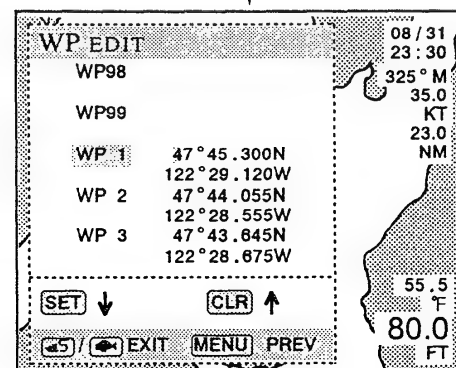
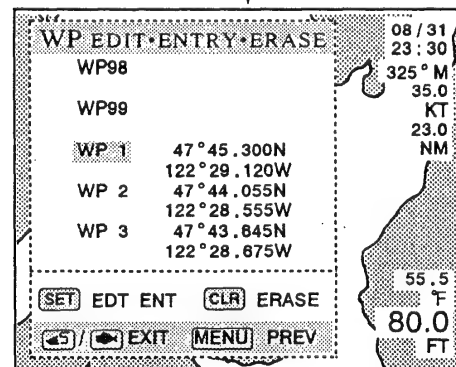
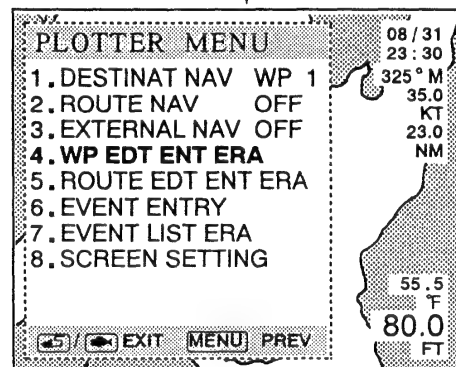
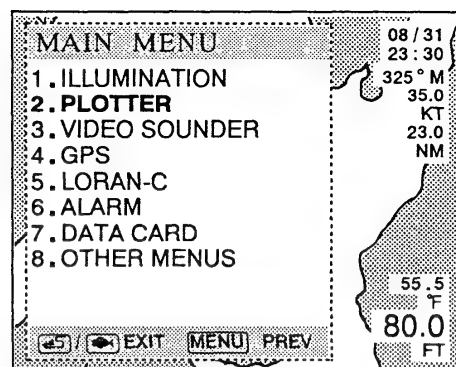
- 1) Push [MENU] to select the menu mode.
- 2) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 3) Select "WP EDT ENT ERA" by rotating the dial; then, push [SET].
 - Pushing [4] also performs this function.
 - The waypoint edit display appears.
- 4) Push and hold [CLR].
 - "ALL WAYPOINTS ERASE" appears.
 - When conditions do not match those listed above, "ALL WAYPOINTS ERASE" does not appear and the command does not activate.
 - To cancel erasing, push [CLR] again.
- 5) Push [SET] to erase.
 - Waypoint erasing is complete.

■ Changing waypoint Lat/Lon data

• Changing Lat/Lon data

The Lat/Lon data programmed into waypoints can be changed in the plotter menu.

- 1) Push [MENU] to select the menu mode.
- 2) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 3) Select "WP EDT ENT ERA" by rotating the dial; then, push [SET].
 - Pushing [4] also performs this function.
 - The waypoint edit window appears.
- 4) Rotate the dial to select a white-data waypoint to be edited; then push [SET].
 - The cyan-data waypoints cannot be edited because they have been programmed into routes. To edit the cyan-data waypoints, first erase the route which contains the waypoints. (p. 37)
 - The cursor appears on the first digit of the latitude.
- 5) Enter new latitude with the digit keys; then push [SET].
 - The direction, N for north or S for south, is changed with the [SELECT] key.
- 6) Enter new longitude with the digit keys; then push [SET].
 - The direction, E for east or W for west, is changed with the [SELECT] key.
- 7) When you want to change the Lat/Lon data of other waypoints, repeat steps 4 ~ 6.
- 8) Push [MENU] to finish editing.
 - "WP EDT ENT ERA" turns yellow.
- 9) Push [5] or [FISH] to exit the menu mode.



Destination navigation (Basic navigation)

Destination navigation leads the vessel to one desired position. Course error can be checked by using it together with the alarm function.

This function is not useful when the shortest course (a straight course) cannot be taken. If, for example, an island lies in the way, use the route navigation described on pgs. 38 ~ 41.

Starting and cancelling the navigation can be performed both on the plot screen and in the menu mode.

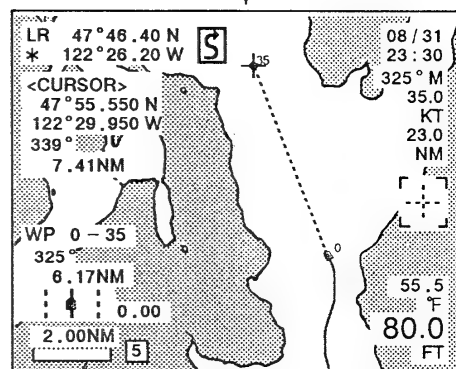
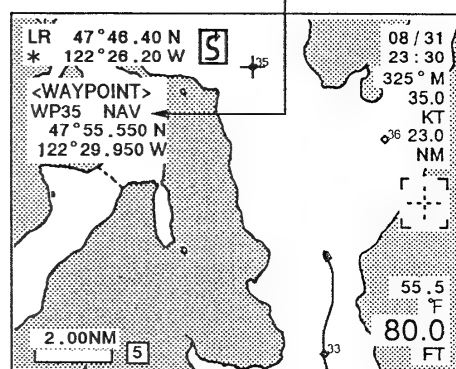
During navigation, the navigation monitor screen is useful for monitoring the navigation data. (p. 14)

Starting on the plot screen

- 1) Program a waypoint (destination) if the desired waypoint has not been programmed. (p. 29)
- 2) Push [CURSOR] to turn the cursor ON.
- 3) Decide on a waypoint for the destination and set the cursor on the waypoint with [△]/[▽]/[◀]/[▶].
- 4) Push [⏏] 2 times.
 - The waypoint information appears.
- 5) Rotate the dial to turn the navigation ON.
 - Green "NAV" appears next to the waypoint number.
- 6) Push [SET] to start destination navigation.
 - After a few seconds, a green, dotted line appears between your vessel and the destination.
- 7) Push [CURSOR] to turn the cursor OFF.

See p. 35 ~ 36 for cancelling the navigation function.

Turn ON "NAV" with the dial.



CONVENIENT

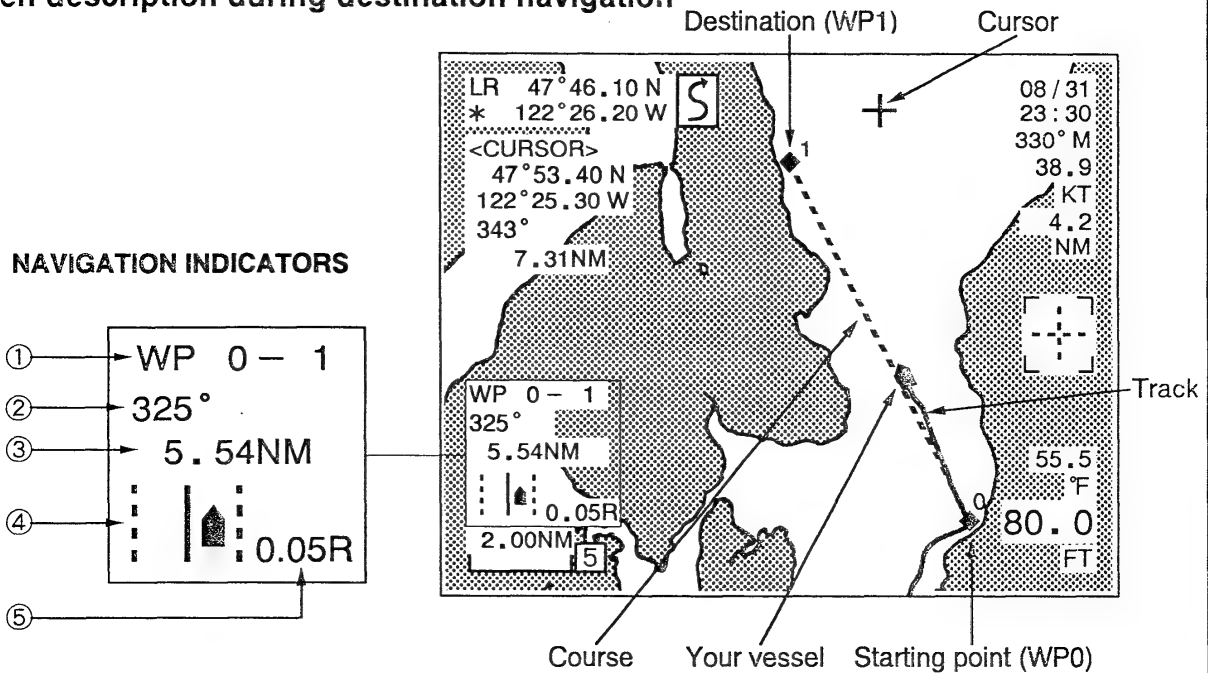
Use the arrival alarm: (p. 42)

The arrival alarm beeps when you reach your destination.

Use the course out alarm: (p. 42)

The course out alarm beeps if you deviate from your plotted course.

- **Screen description during destination navigation**



① WAYPOINT READOUT

Shows the selected course.

- “WP 0 – 1” shows that the selected course is from waypoint 0 to waypoint 1.

② C/D (COURSE TO DESTINATION) READOUT

Shows the direction to the target waypoint.








- Target waypoint is the destination during destination navigation.

③ D/D (DISTANCE TO DESTINATION) READOUT

Shows the distance to the target waypoint.

- Target waypoint is the destination during destination navigation.

④ COURSE OUT INDICATOR



INDICATION	DESCRIPTION
	Your vessel is left of the preset, course limits/alarm ranges.
	Your vessel is between the preset, course in and course out, alarm ranges.
	Your vessel is inside the preset, course in and course out, alarm ranges.
	Your vessel is right on course.
	Your vessel is inside the preset, course in and course out, alarm ranges.
	Your vessel is between the preset, course in and course out, alarm ranges.
	Your vessel is right of the preset, course limits/alarm ranges.

⑤ COURSE DEVIATION READOUT

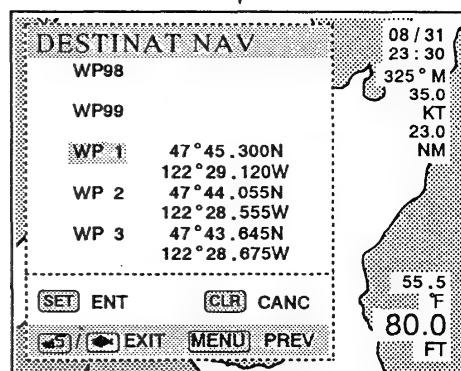
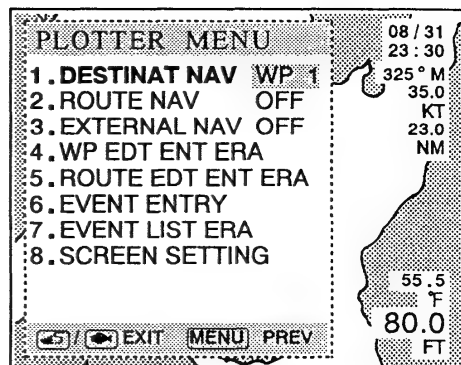
Shows distance from the selected navigation course.

3 PLOTTER OPERATION






• Starting in the plotter menu

- 1) Program a waypoint (destination) if the desired waypoint has not been programmed.
- 2) Push [MENU] to select the menu mode.
- 3) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 4) Select "DESTINAT NAV" by rotating the dial; then, push [SET].
 - Pushing [1] also performs this function.
 - "DESTINAT NAV" turns green.
- 5) Rotate the dial to select "WP XX," then push [SET].
 - The waypoints list appears.
- 6) Rotate the dial to select the waypoint as a destination, then push [SET].
 - "DESTINAT NAV" turns yellow and the navigation starts.
- 7) Push [] or [] to exit the menu mode.
 - A green, dotted line appears between your vessel position ("0" is indicated) and the destination.

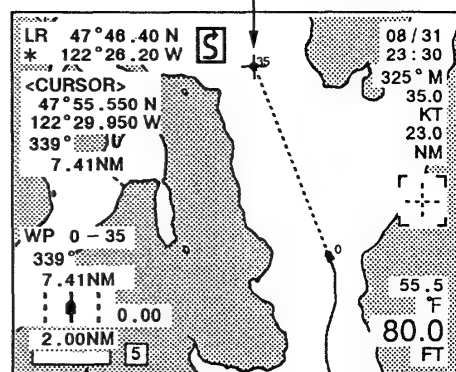
See the boxes below and on p. 36 for cancelling the navigation function.



• Function cancelling on the plot screen

- 1) Push [CURSOR] to turn the cursor ON.
- 2) Set the cursor on the destination waypoint or waypoint "0" with [] [] [] [].
- 3) Push [] twice.
 - The waypoint information appears.
- 4) Rotate the dial to turn the navigation OFF.
 - Green "NAV" disappears.
- 5) Push [SET] to cancel destination navigation.
 - The green, dotted line disappears.
- 6) Push [CURSOR] to turn the cursor OFF.

Set the cursor on the destination waypoint.

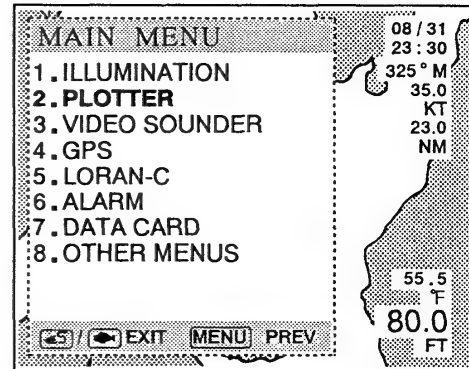


NOTE: When route navigation or external navigation is selected from the plotter menu during destination navigation, destination navigation will be automatically cancelled.

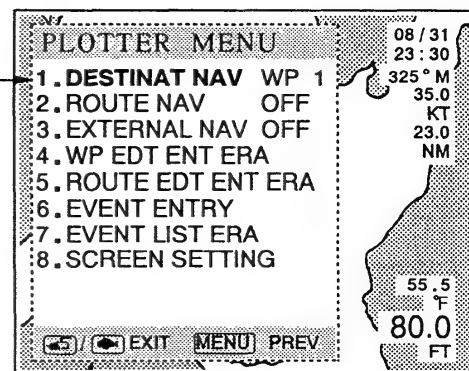
• Function cancelling in the plotter menu

- 1) Push [MENU] to select the menu mode.
- 2) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 3) Select "DESTINAT NAV" by rotating the dial; then, push [SET].
 - Pushing [1] also performs this function.
 - "DESTINAT NAV" turns green.
- 4) Select "OFF" by rotating the dial.
- 5) Push [SET].
 - "DESTINAT NAV" turns yellow.
 - Destination navigation is cancelled.

NOTE: When route navigation or external navigation is selected in the plotter menu during destination navigation, destination navigation will be automatically cancelled.



Setting
part



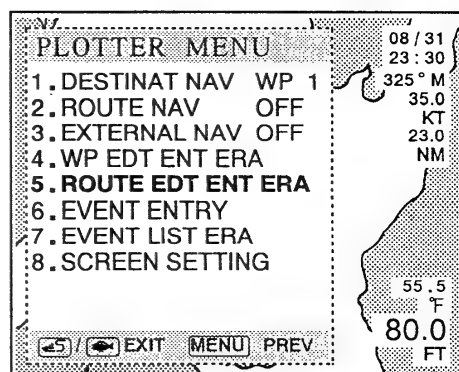
PLOTTER

■ Programming, erasing and reprogramming routes

For route programming, several waypoints must be programmed in advance.

- 1) When route navigation is activated, turn the navigation OFF. (p. 40)
- 2) Push [MENU] to select the menu mode.
- 3) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 4) Select "ROUTE EDT ENT ERA" by rotating the dial; then, push [SET].
 - Pushing [5] also performs this function.
 - The route edit window appears.
- 5) When programming a new route, rotate the dial to select a cyan route number from No 1 ~ No 10; then, push [SET].
 - When reprogramming the programmed route, select a white route number, then push [SET]. Follow the instructions on the route edit window to reprogram a route.
 - When erasing the programmed route, select a white route number, then push [CLR], then [SET].
- 6) Rotate the dial to select the first waypoint; then, push [SET].
 - Cyan waypoints cannot be selected since they have not been programmed.
- 7) Set the subsequent waypoints as described in step 6.
 - To erase a waypoint, push [CLR].
- 8) When all waypoints have been programmed, rotate the dial to select "END"; then push [SET].
 - The return route is automatically programmed in reverse.
- 9) Repeat steps 5 ~ 8 to program other routes.
- 10) Push [5] or [FISH] to exit the menu mode.

[DISPLAY FOR ROUTE PROGRAMMING]



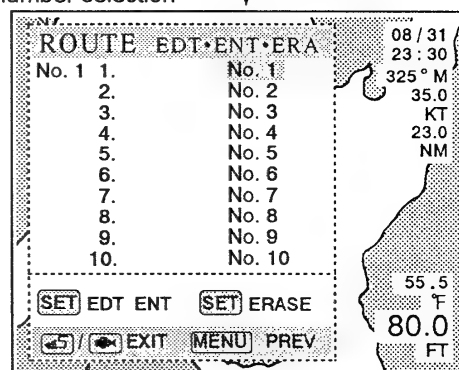
PLOTTER MENU

1. DESTINAT NAV	WP 1
2. ROUTE NAV	OFF
3. EXTERNAL NAV	OFF
4. WP EDT ENT ERA	
5. ROUTE EDT ENT ERA	
6. EVENT ENTRY	
7. EVENT LIST ERA	
8. SCREEN SETTING	

08 / 31
23 : 30
325° M
35.0
KT
23.0
NM
55.5
° F
80.0
° F

[5] / [FISH] EXIT MENU PREV

Route number selection



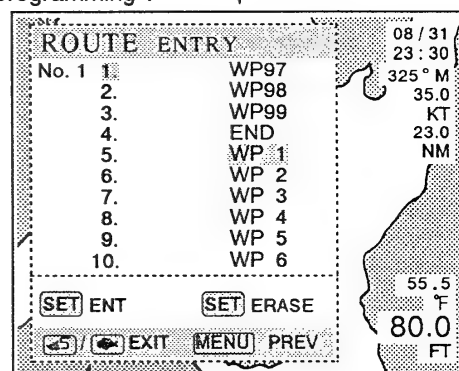
ROUTE EDT ENT ERA

No. 1	1.	No. 1
	2.	No. 2
	3.	No. 3
	4.	No. 4
	5.	No. 5
	6.	No. 6
	7.	No. 7
	8.	No. 8
	9.	No. 9
	10.	No. 10

[SET] EDT ENT [SET] ERASE
[5] / [FISH] EXIT MENU PREV

08 / 31
23 : 30
325° M
35.0
KT
23.0
NM
55.5
° F
80.0
° F

Route programming 1



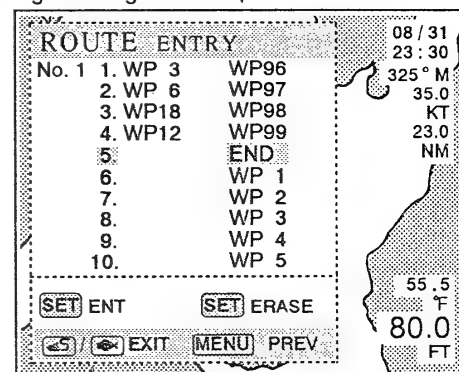
ROUTE ENTRY

No. 1	1.	WP97
	2.	WP98
	3.	WP99
	4.	END
	5.	WP 1
	6.	WP 2
	7.	WP 3
	8.	WP 4
	9.	WP 5
	10.	WP 6

[SET] ENT [SET] ERASE
[5] / [FISH] EXIT MENU PREV

08 / 31
23 : 30
325° M
35.0
KT
23.0
NM
55.5
° F
80.0
° F

Route programming 2



ROUTE ENTRY

No. 1	1.	WP 3	WP96
	2.	WP 6	WP97
	3.	WP18	WP98
	4.	WP12	WP99
	5.		END
	6.		WP 1
	7.		WP 2
	8.		WP 3
	9.		WP 4
	10.		WP 5

[SET] ENT [SET] ERASE
[5] / [FISH] EXIT MENU PREV

08 / 31
23 : 30
325° M
35.0
KT
23.0
NM
55.5
° F
80.0
° F

■ Route navigation

Route navigation guides the vessel to a desired location along a preset route. Route navigation is convenient when navigating to several points in sequence.

For route navigation, routes must be programmed in advance.

Route navigation can only be started in the menu mode but can be cancelled both on the plot screen and in the menu mode.

During navigation, the monitor screen displays useful navigation information. (p. 14)

• Starting navigation

- 1) Program waypoints and routes if the desired route has not yet been programmed.
- 2) Push [MENU] to select the menu mode.
- 3) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 4) Select "ROUTE NAV" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - "ROUTE NAV" turns green.
- 5) Rotate the dial to select "No. XX," then push [SET].
 - The routes list appears.
- 6) Rotate the dial to select a route.
 - DO NOT push [SET] when step 7 is complete.
 - Cyan routes cannot be selected since they have not been programmed.
- 7) Push [SELECT] to select the route direction: "GO" for going or "RETURN" for returning.
- 8) Push [SET].
 - "ROUTE NAV" turns yellow and navigation starts.
- 9) Push [←5] or [→5] to exit the menu mode.
 - A green, dotted line appears between your vessel position ("0" is indicated) and the first waypoint. Magenta dotted lines connect the first waypoint, and all subsequent waypoints, to the destination (the last waypoint).

See p. 40 for cancelling the navigation function.

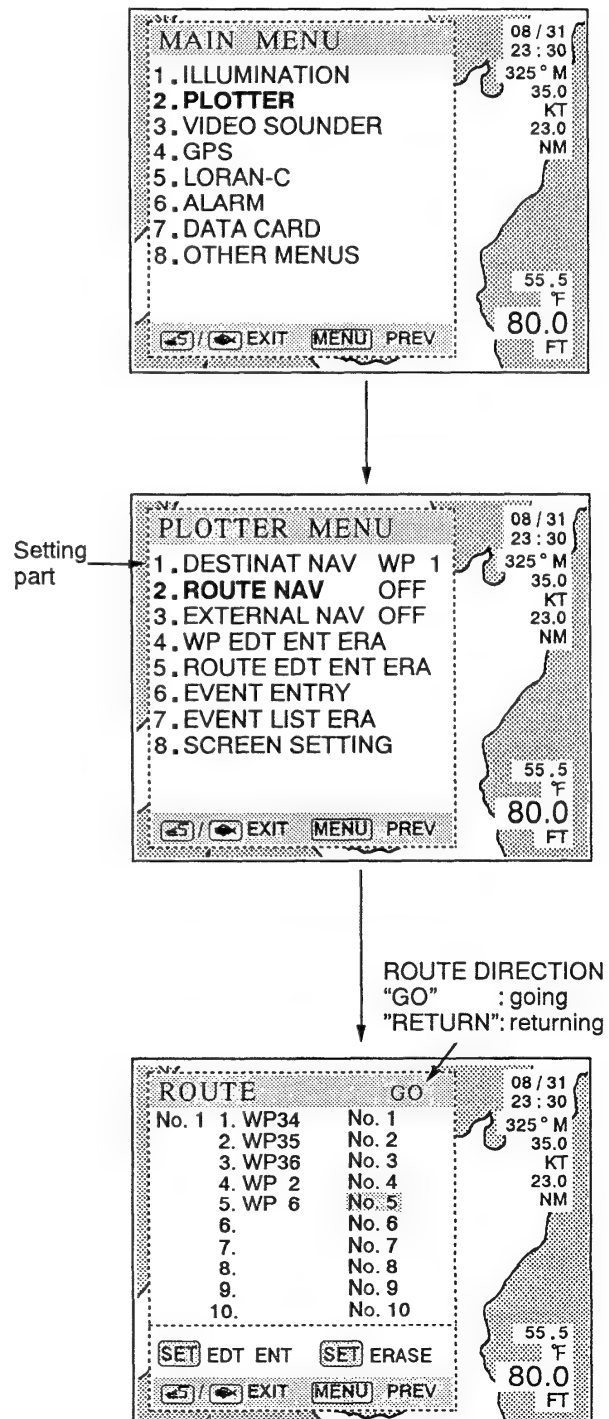
CONVENIENT

Use the arrival alarm: (p. 42)

The arrival alarm beeps when you reach each waypoint.

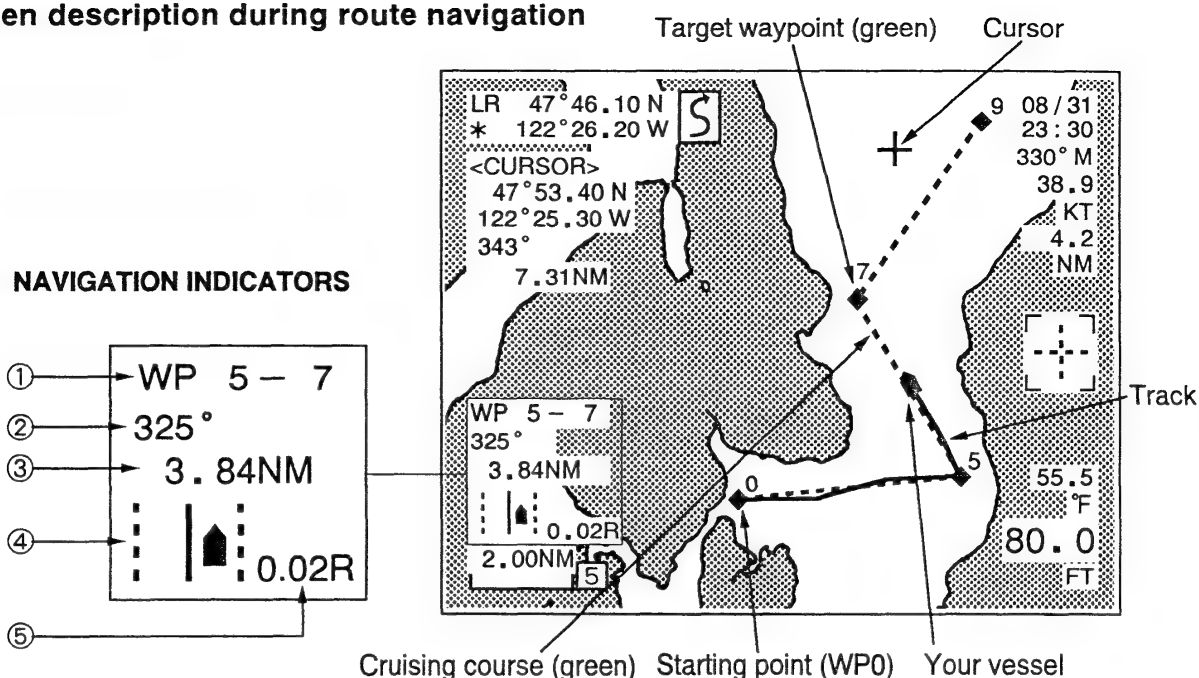
Use the course out alarm: (p. 42)

The course out alarm beeps if you deviate from your plotted course.



PLOTTER

• Screen description during route navigation



① WAYPOINT READOUT

Shows the selected course.

- "5 - 7" shows that the present cruising course is from waypoint 5 to waypoint 7.
- When your vessel arrives* at a target waypoint, the next waypoint becomes the target and the next course is selected automatically.

② C/D (COURSE TO DESTINATION) READOUT

Shows the direction to the target waypoint.

- Target waypoint is green.

③ D/D (DISTANCE TO DESTINATION) READOUT

Shows the distance to the target waypoint.

- Target waypoint is green.

*The judgement of whether the vessel has arrived at a target waypoint depends on the range of the arrival alarm. Even when the alarm is not activated, the memorized range is effective for judgement.

④ COURSE OUT INDICATOR

INDICATION	DESCRIPTION
	Your vessel is left of the preset, course limits/alarm ranges.
	Your vessel is between the preset, course in and course out, alarm ranges.
	Your vessel is inside the preset course in and course out, alarm ranges.
	Your vessel is right on course.
	Your vessel is inside the preset, course in and course out, alarm ranges.
	Your vessel is between the preset, course in and course out, alarm ranges.
	Your vessel is right of the preset, course limits/alarm ranges.

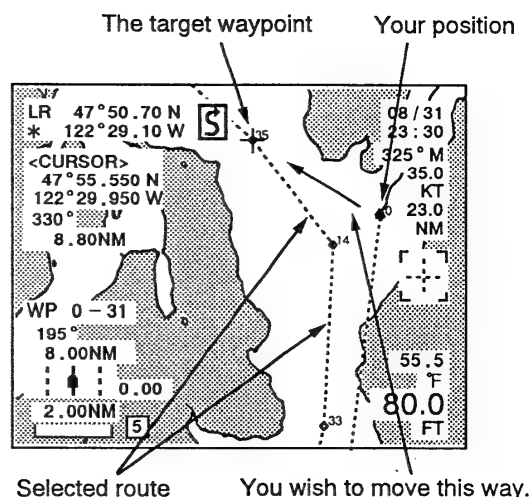
⑤ COURSE DEVIATION READOUT

Shows distance from the selected navigation course.

• Starting navigation with part of a route

You can change the watching range during route navigation. You can also start route navigation in the middle of a route using this function.

- 1) Start route navigation with your desired route.
 - Perform steps 1 ~ 9 described on p. 38.
- 2) On the plot screen, decide the desired target waypoint in the displayed route.
- 3) Push [CURSOR] to turn the cursor ON.
- 4) Set the cursor on the target waypoint with [Δ]/[∇]/[\triangleleft]/[\triangleright].
- 5) Push [\mathcal{P}/\diamond] twice.
 - The selected waypoint information and information for the next waypoint appears.
- 6) Push [SET].
 - Cruising course (watching range) is determined to the target waypoint and is displayed in green.
 - C/D, D/D and TTG readouts show the information for the selected target waypoint.



The figure above shows the plot screen after the cursor is set on the target waypoint in the route navigation. (Between step 4 and step 5 described at left.)

PLOTTER

• Function cancelling on the plot screen

- 1) Push [CURSOR] to turn the cursor ON.
- 2) Set the cursor on one of the waypoints in the selected route with [Δ]/[∇]/[\triangleleft]/[\triangleright].
- 3) Push [\mathcal{P}/\diamond] twice.
 - Waypoint information appears.
- 4) Rotate the dial to turn the function OFF.
 - Green "NAV" disappears.
- 5) Push [SET].
 - Route navigation is cancelled.

• Displaying total distance of the route

- 1) Start route navigation with your desired route.
 - Perform steps 1 ~ 9 described on p. 38.
- 2) Push [CURSOR] to turn the cursor ON.
- 3) Set the cursor on the last (destination) waypoint of the selected route with [Δ]/[∇]/[\triangleleft]/[\triangleright].
- 4) Push [\mathcal{P}/\diamond] twice.
 - The total distance of the selected cruising route with the waypoint information appears.
- 5) Push [CURSOR] twice to turn the cursor OFF.

• Function cancelling in the plotter menu



- 1) Push [MENU] to select the menu mode.
- 2) Select "PLOTTER" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 3) Select "ROUTE NAV" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - "ROUTE NAV" turns green.
- 4) Rotate the dial to select "OFF."
- 5) Push [SET].
 - "ROUTE NAV" turns yellow.
 - Route navigation is cancelled.

NOTE: When destination navigation or external navigation is selected in the plotter menu during route navigation, route navigation will automatically be cancelled.

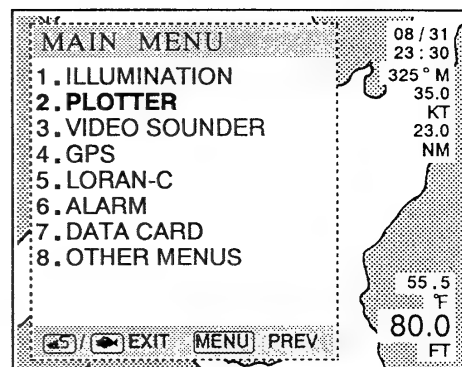
External navigation

When a connected navigation receiver has waypoint capability, the waypoint can be used as the destination. Operation is nearly the same as destination navigation.

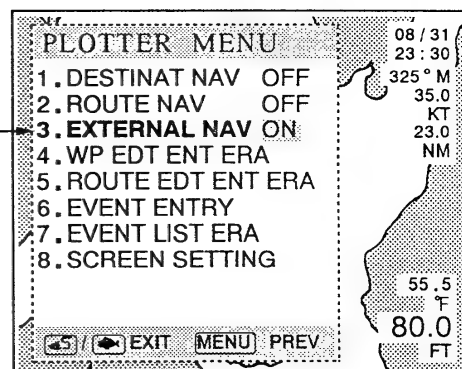
NOTE: External navigation can be used only when the connected navigation receiver outputs “*WPL” data of the NMEA0183 format.

- 1) Push [MENU] to select the menu mode.
- 2) Select “PLOTTER” by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The plotter menu window appears.
- 3) Select “EXTERNAL NAV” by rotating the dial; then, push [SET].
 - Pushing [3] also performs this function.
 - “EXTERNAL NAV” turns green.
- 4) Rotate the dial to select “ON”; then, push [SET].
 - “EXTERNAL NAV” turns yellow and navigation starts.
- 5) Push [] or [] to exit the menu mode.
 - After a few seconds, a green, dotted line appears between your vessel position (waypoint 0) and external waypoints.
- 6) To cancel external navigation, repeat steps 1 ~ 3 above, then select “OFF” with the dial; then, push [SET].

NOTE: When destination navigation or route navigation is selected in the plotter menu during external navigation, external navigation will automatically be cancelled.







Setting
part



3-6 Plotter alarms

■ Alarm types

The FP-100 has 4 types of plotter alarms to suit your operating needs.

ALARM	INDICATION	FUNCTION
Arrival		The alarm sounds when your vessel reaches the pre-set area of the destination.
Anchor		The alarm sounds when your vessel leaves the pre-set area of the destination.
Course out		The alarm sounds when your vessel goes out of the pre-set alarm area.
Course in		The alarm sounds when your vessel enters the pre-set alarm area.

■ Alarm setting

Set the desired alarm. Multiple alarms can be activated simultaneously.

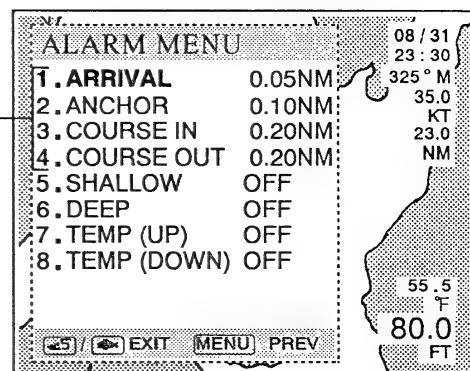
- 1) Push [MENU] to select the menu mode.
- 2) Select "ALARM" by rotating the dial; then, push [SET].
 - Pushing [6] also performs this function.
 - The alarm menu window appears.
- 3) Rotate the dial to select the desired alarm; then, push [SET].
 - Digit keys can also select an alarm.
 - Numbers 5 ~ 8 are sounder alarms.
- 4) Rotate the dial to select the value (not "OFF"), then enter the desired value with the digit keys.
 - The maximum value is 1.00 NM.
 - The arrival alarm value cannot be set more than the anchor alarm value. If this is attempted, the anchor alarm value will automatically be set to the same value as the arrival alarm.
 - To cancel the setting, select "OFF."
 - The units of distance can be changed in the set mode.

- 5) Push [SET] to set the alarm.
 - The alarm is activated.

- 6) When setting more than one alarm, repeat steps 3 ~ 5 above.

- 7) Push [←5] or [←6] to exit the menu mode.

Plotter
alarms



• Operation

The plotter alarms are available only when one of the navigation functions has been activated.

Start one of the navigation functions. When the vessel meets an alarm condition, the alarm sounds.

To stop the alarm after it sounds, push [CLR].

NOTE: If your vessel meets the pre-set condition again, the alarm sounds again.

To cancel the alarm setting, select "OFF" in step 4 above.

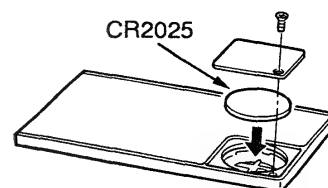
3-7 RAM card

Drawn track, programmed event marks, waypoints and routes remain in the FP-601. However, when the information exceeds a certain limit, a RAM card is needed to store the information.

The EX-1142 RAM CARD stores 2 sets of data.

• Battery installation

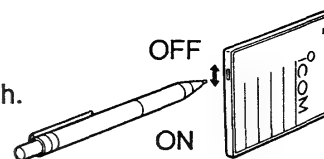
Install the supplied battery, as shown at right, before use.



• Memory protection switch

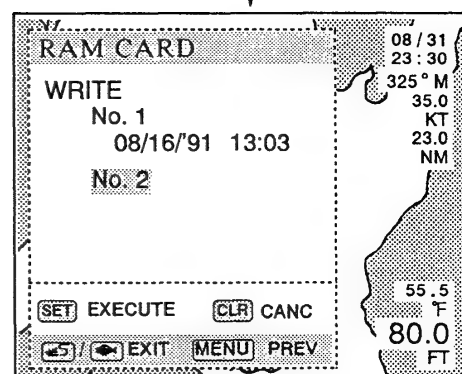
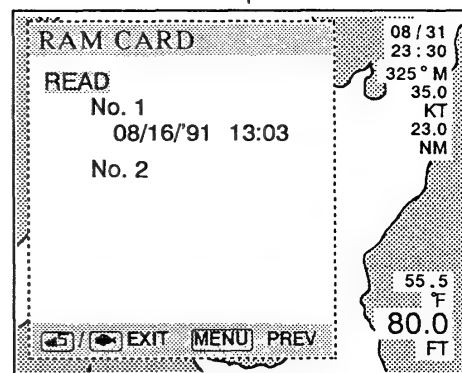
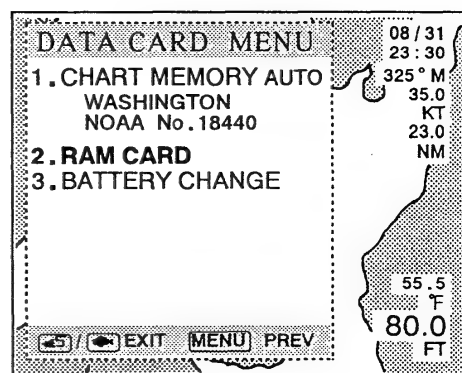
The EX-1142 RAM CARD has a memory protection switch to protect from accidental erasing. For programming, erasing the memory or replacing the battery, set this switch to the OFF position.

Use a pointed object such as a mechanical pencil to slide the switch.





• Data programming

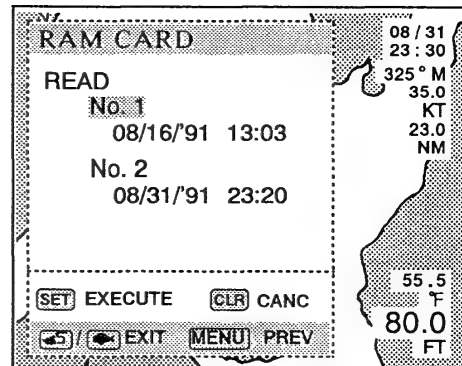
- 1) Push [MENU] to select the menu mode.
- 2) Select "DATA CARD" by rotating the dial; then, push [SET].
 - Pushing [7] also performs this function.
 - The data card menu window appears.
- 3) Insert the RAM card into the card slot.
- 4) Select "RAM CARD" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The RAM card window appears.
 - When the RAM card already has information, programmed date and time appear.
- 5) When the RAM card already has 2 sets of data, erase one set for programming new data. See p. 44 for details.
- 6) Select "WRITE" by rotating the dial; then, push [SET].
- 7) Select "No 1" or "No 2," whichever does not have data by rotating the dial.
- 8) Push [SET] to write the new data.
 - The data card window appears and programming is complete.
- 9) To check the date and time, push [SET] again to select the RAM card menu.
- 10) Push [5] or [F] to exit the menu mode.



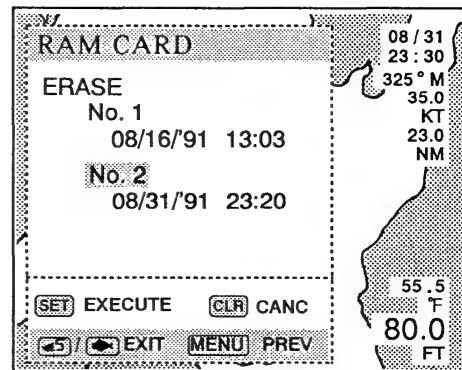
• Data reading/erasing

- 1) Turn OFF destination navigation and route navigation if they are activated. (pgs. 35, 36, 40)
- 2) Push [MENU] to select the menu mode.
- 3) Select "DATA CARD" by rotating the dial; then, push [SET].
 - Pushing [7] also performs this function.
 - The data card menu window appears.
- 4) Insert the RAM card into the card slot.
- 5) Select "RAM CARD" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - The RAM card window appears.
 - The comment and date of programmed data appear.
- 6) Select "READ" for reading, or "ERASE" for erasing, by rotating the dial; then, push [SET].
 - If destination or route navigation is activated, "READ" cannot be selected.
- 7) Select either data "No 1" or "No 2" by rotating the dial; then, push [SET].
 - The data card display appears and reading/erasing is complete.
- 8) Push [] or [] to exit the menu mode.

When reading a set of data



When erasing a set of data

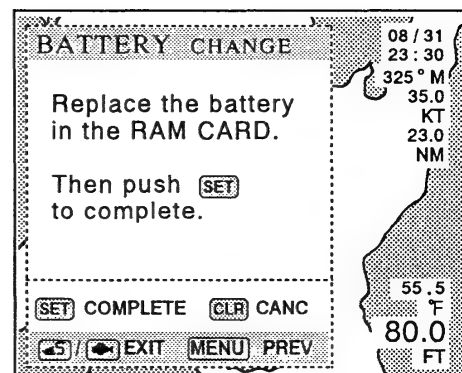


PLOTTER

• Battery replacement

When replacing the battery, BE SURE to follow the procedure below.

- 1) Push [MENU] to select the menu mode.
- 2) Select "DATA CARD" by rotating the dial; then, push [SET].
 - Pushing [7] also performs this function.
 - The data card menu window appears.
- 3) Insert the RAM CARD into the slot.
- 4) Select "BATTERY CHANGE" by rotating the dial; then, push [SET].
 - Pushing [3] also performs this function.
 - The display at right appears.
- 5) Pull out the RAM card; then replace the battery.
- 6) Insert the RAM card into the slot again; then, push [SET].
 - Battery replacement is complete.



3-8 GPS data correction

GPS positioning data may differ from your actual position depending on the satellite conditions. If the GP-2000 GPS RECEIVER UNIT is connected, slight Lat/Lon adjustment can be performed from the FP-601.

The GP-2000 includes an averaging function for smooth plotting. This setting can be performed in the FP-601.



• Lat/Lon correction

Lat/Lon correction is performed when your exact ship position can be figured out using a nautical chart.

CAUTION: Before correcting, make sure that "GP" is indicated in the navigation receiver indicator if both the GP-2000 and RX-1191 are connected. See p. 20 for details.

Set the cursor to your actual position on the displayed chart; then, calculate the corrected value using the following formula:

The corrected value =
 Cursor position –
 Lat/Lon on the screen (data from the GP-2000)



- 1) Push [MENU] to select the menu mode.
- 2) Select "GPS" by rotating the dial; then, push [SET].
 - Pushing [4] also performs this function.
 - The GPS menu window appears.
- 3) Select "LAT CORRECT" by rotating the dial; then push [SET].
 - Pushing [4] also performs this function.
 - "LAT CORRECT" turns green.
- 4) Enter the latitude correction with the digit keys, then push [SET].
 - The direction, N for north or S for south, is changed with the [SELECT] key.
 - "LAT CORRECT" turns yellow.
- 5) Select "LON CORRECT" by rotating the track-ball vertically; then push [SET].
 - Pushing [5] also performs this function.
 - "LON CORRECT" turns green.
- 8) Enter the longitude correction with the digit keys, then push [SET].
 - The direction, E for east or W for west, is changed with the [SELECT] key.
 - "LON CORRECT" turns yellow.
- 7) Push [ 5] or [] to exit the menu mode.

• Averaging setting

For a smooth and accurate plot, positioning data is averaged from previous data and current readings.

VALUE	AVERAGING
1	Awkward track is drawn.
1	1
10	Recommended value.
1	1
999	Too smooth a track is drawn.

For GPS averaging function details, see the GP-2000 instruction manual.

- 1) Push [MENU] to select the menu mode.
- 2) Select "GPS" by rotating the dial; then, push [SET].
 - Pushing [4] also performs this function.
 - The GPS menu window appears.
- 3) Select "AVERAGING" by rotating the dial; then push [SET].
 - Pushing [6] also performs this function.
 - "AVERAGING" turns green.
- 4) Enter the averaging value in the range of 1 ~ 999 with the digit keys; then, push [SET].
 - "AVERAGING" turns yellow.
- 5) Push [ 5] or [] to exit the menu mode.

3-9 Loran-C data correction

If an optional RX-1191 LORAN-C RECEIVER UNIT has been connected, receiving data can be corrected in the plotter menu. There are 2 types of corrections: Lat/Lon and TD1/TD2 (delay time of slave stations).

Both Lat/Lon and TD1/TD2 are required for exact correction. However, for rough corrections, only one may be enough.

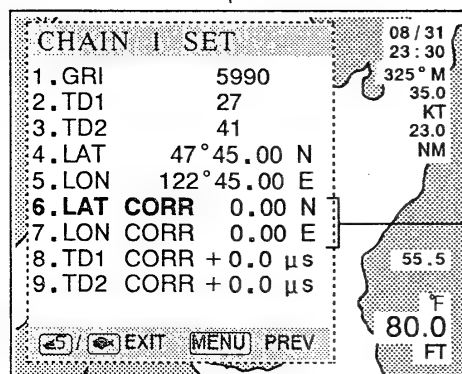
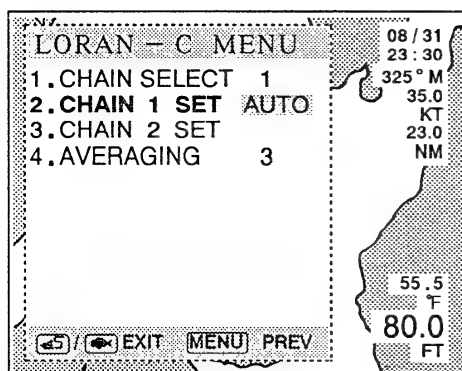
CAUTION: Before Lat/Lon or TD1/TD2 correcting, make sure that "LR" is indicated in the navigation receiver indicator if both the GP-2000 and RX-1191 are connected. See p. 20 for details.

• Lat/Lon correction

Lat/Lon correction is performed when your exact vessel position can be figured out using a nautical chart.

Set the cursor to your actual position on the displayed chart; then, calculate the corrected value using the following formula:

The corrected value =
 Cursor position –
 Lat/Lon on the screen (data from the RX-1191)



Setting part

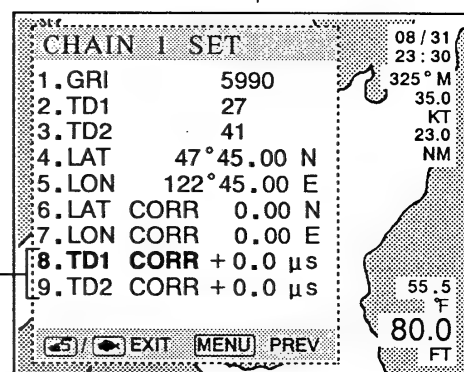
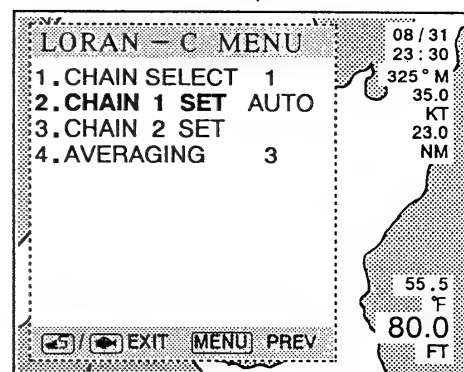
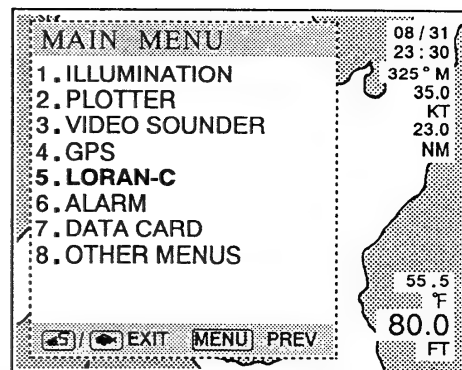
- 1) Push [MENU] to select the menu mode.
- 2) Select "LORAN-C" by rotating the dial; then, push [SET].
 - Pushing [5] also performs this function.
 - The Loran-C menu window appears.
- 3) Select "CHAIN 1 SET" or "CHAIN 2 SET" by rotating the dial; then, push [SET].
 - Select "CHAIN 1 SET" when "1" is selected in "CHAIN SELECT."
 - Select "CHAIN 2 SET" when "2" is selected in "CHAIN SELECT."
 - Pushing [2] or [3] also performs this function.
 - The chain 2 setting window appears when "CHAIN 2 SET" is selected.
- 4) When "CHAIN 1 SET" is selected, "CHAIN 1 SET" turns green; then, push [SET].
 - The chain 1 setting window appears.
 - Both "AUTO" and "MANU" are acceptable.
- 5) Select "LAT CORR" by rotating the dial; then push [SET].
 - Pushing [6] also performs this function.
 - "LAT CORR" turns green.
- 6) Enter the longitude correction with the digit keys, then push [SET].
 - The direction, N for north or S for south, is changed with the [SELECT] key.
 - "LAT CORR" turns yellow.
- 7) Select "LON CORR" by rotating the dial; then push [SET].
 - Pushing [7] also performs this function.
 - "LON CORR" turns green.
- 8) Enter the longitude correction with the digit keys, then push [SET].
 - The direction, E for east or W for west, is changed with the [SELECT] key.
 - "LON CORR" turns yellow.
- 9) Push [5] or [FISH] to exit the menu mode.

3 PLOTTER OPERATION

• Time delay correction


Time Delay (TD) correction can be performed when you have a loran table for TD correction.

- 1) Push [MENU] to select the menu mode.
- 2) Select "LORAN-C" by rotating the dial; then, push [SET].
 - Pushing [5] also performs this function.
 - The Loran-C menu window appears.
- 3) Select "CHAIN 1 SET" or "CHAIN 2 SET" by rotating the dial; then, push [SET].
 - Select "CHAIN 1 SET" when "1" is selected in "CHAIN SELECT"
 - Select "CHAIN 2 SET" when "2" is selected in "CHAIN SELECT"
 - Pushing [2] or [3] also performs this function.
 - The chain 2 setting window appears when "CHAIN 2 SET" is selected.
- 4) When "CHAIN 1 SET" is selected, "CHAIN 1 SET" turns green; then, push [SET].
 - The chain 1 setting window appears.
 - Both "AUTO" and "MANU" are acceptable.
- 5) Select "TD1 CORR" by rotating the dial; then push [SET].
 - Pushing [8] also performs this function.
 - "TD1 CORR" turns green.
- 6) Enter the TD1 (delay time for slave station 1) correction with the digit keys, then push [SET].
 - + / - is changed with the [SELECT] key.
 - "TD1 CORR" turns yellow.
- 7) Select "TD2 CORR" by rotating the dial; then push [SET].
 - Pushing [9] also performs this function.
 - "TD2 CORR" turns green.
- 8) Enter the TD2 (delay time for slave station 2) correction with the digit keys, then push [SET].
 - + / - is changed with the [SELECT] key.
 - "TD2 CORR" turns yellow.
- 9) Push [5] or [EXIT] to exit the menu mode.



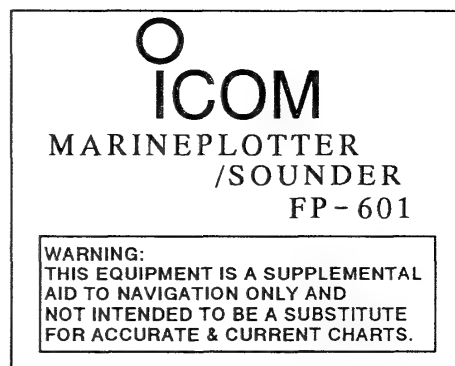
4 SOUNDER OPERATION

4-1 Selecting sounder mode

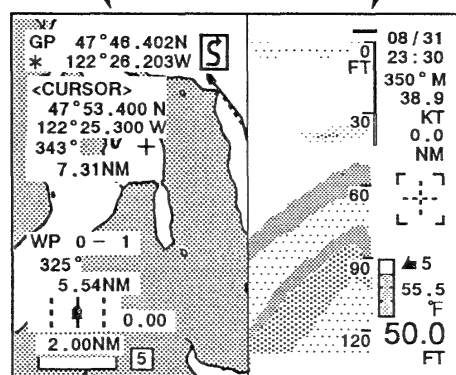
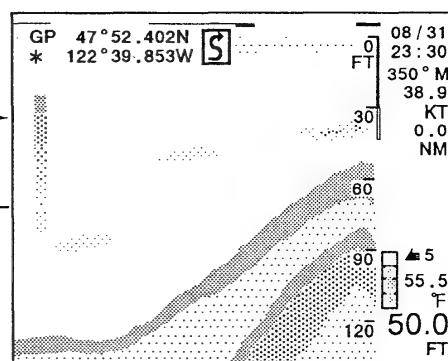
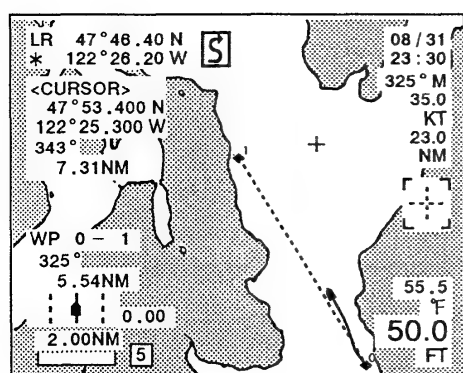
- 1) Push [POWER] to turn power ON.
 - Either the plotter mode, sounder mode, or combination mode screen will appear depending on what screen was selected before the power was turned OFF.
- 2) Push [] to select the sounder mode when the plotter mode has been selected.
 - The video sounder is activated with all settings, such as mode, depth range, phase shift, etc. at previously set values.
 - To turn the power OFF, push and hold [POWER] for 1 sec.



Power ON



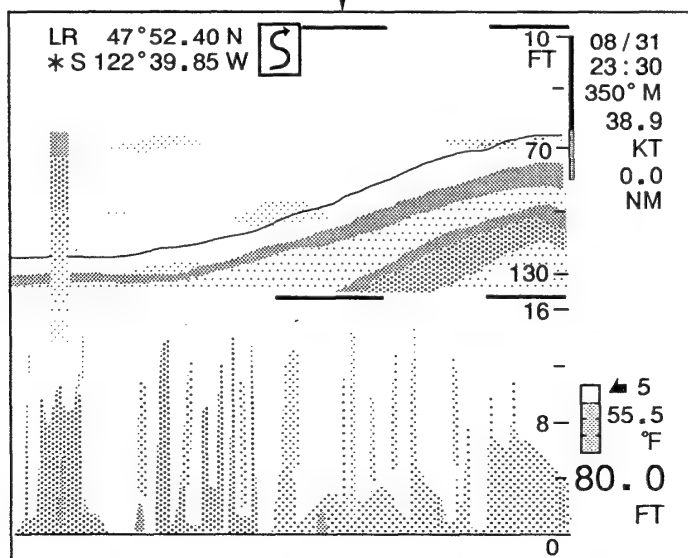
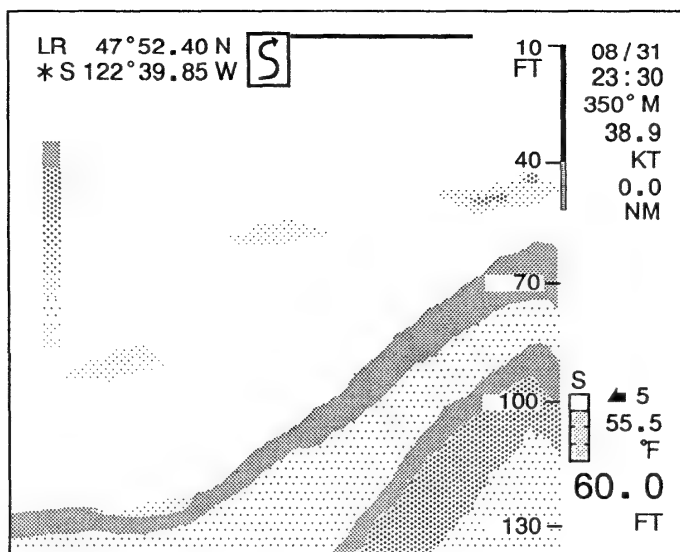
Opening display



SOUNDER

■ Sounder mode

Basic screen



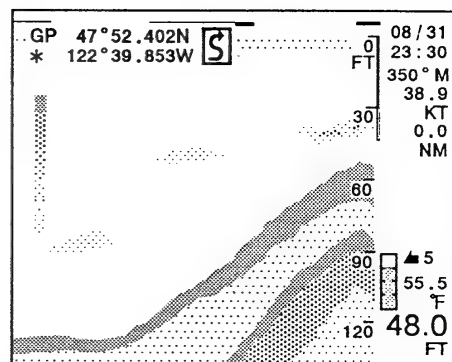
Basic + bottom lock screen

■ Compulsory settings

The following operations are required for using the sounder. For details of each setting, see pgs. 55 ~ 56.

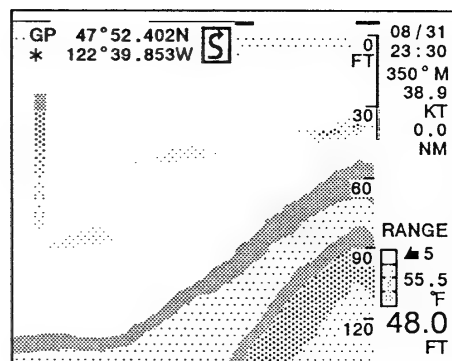
① Basic screen selection (p. 50)

Select the basic screen.



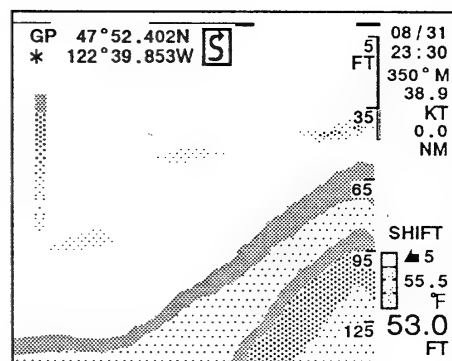
② Depth range setting (p. 55)

Push [RANGE/SHIFT]; then, select the depth range with the dial.



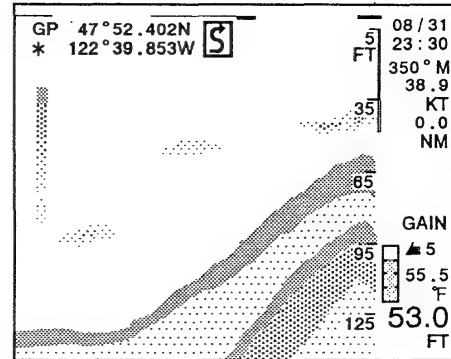
③ Phase shift setting (p. 55)

Push and hold [RANGE/SHIFT] until "SHIFT" appears; then, select the phase shift with the dial.



④ **Sensitivity adjustment** (p. 56)

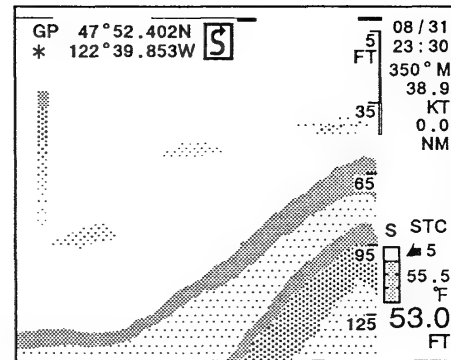
Push [GAIN/STC]; then, set the sensitivity with the dial.



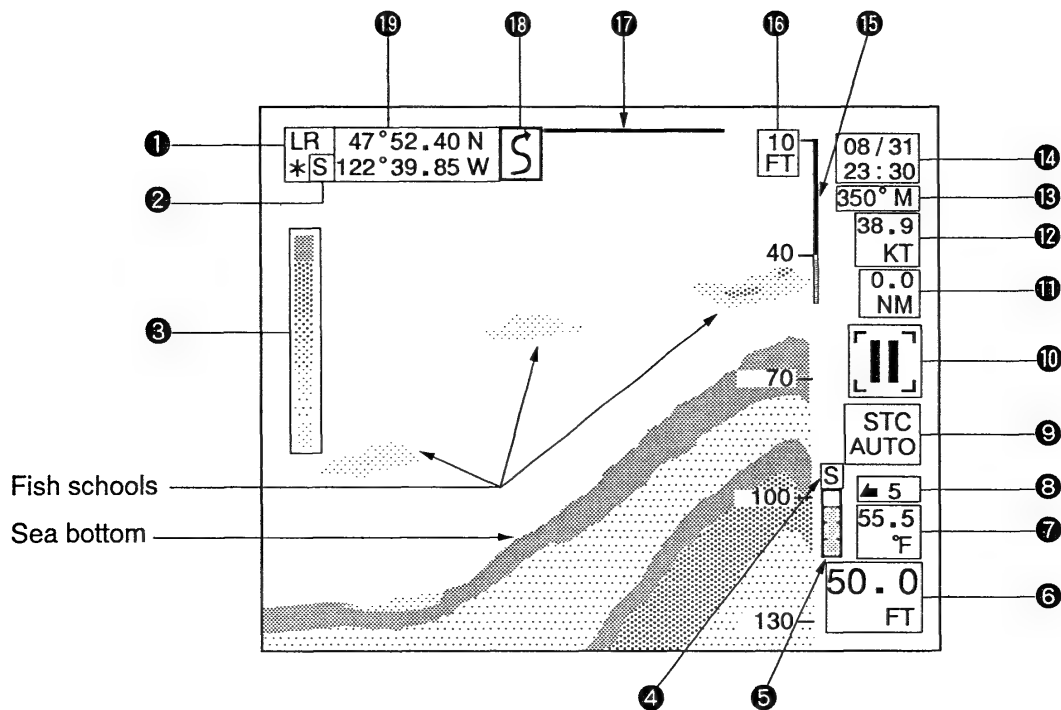
⑤ **Sensitivity of outer layer adjustment**

(p. 56)

Push and hold [GAIN/STC] until "STC" appears; then, set the STC with the dial.



Basic screen



- 1 NAVIGATION RECEIVER INDICATOR** (p. 20)
Displays navigation receiver being used.

- 2 POSITIONING DATA ERROR INDICATOR**
"S" or "S.ERR" appears when the positioning equipment sends error signals.

"R" or "R.ERR" appears when the FP-601 cannot receive positioning data for more than 10 sec.

- 3 COLOR BAR** (p. 63)
Shows the color reference.
• All colors may not be displayed when the noise reduction is activated.

- 4 STC INDICATOR** (p. 56)
Shows the sensitivity bar is displaying the STC value.

- 5 SENSITIVITY BAR** (p. 56)
Shows the selected sensitivity value.
• When "S" is indicated above, it shows the STC value.

- 6 WATER DEPTH READOUT**
Shows the water depth.

- 7 WATER TEMPERATURE READOUT**
Shows the water temperature.

- 8 DISPLAY SPEED INDICATOR** (p. 60)
Shows the selected display speed.

- One of "1" ~ "5" appears corresponding to the selected display speed or a ship mark appears for speed synchronization.

- 9 FUNCTION INDICATOR**
Shows the activated setting condition or function.
• "RANGE" is for depth range.
• "SHIFT" is for phase shift.
• "GAIN" is for sensitivity.
• "STC" is for STC.
• "AUTO" is for the auto function.

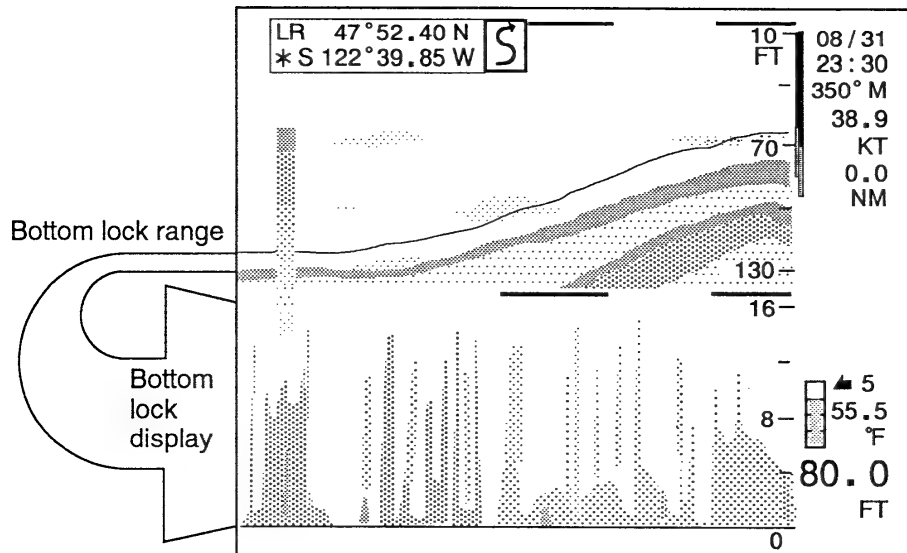
- 10 CONDITION INDICATOR** (p. v)
Shows the condition. See p. v for details.

- 11 TRIP LOG READOUT** (p. 70)
Shows the trip log.

- 12 VESSEL SPEED READOUT** (p. 71)
Shows the vessel speed.

- 13 HEADING READOUT** (p. 71)
Shows the vessel heading.
• "MAG" or "M" appears when magnetic bearing is selected.

Basic + bottom lock screen



14 DATE/TIME READOUT (p. 7)

Shows date and time.

- These values are set in the set mode.

15 ALARM RANGE MARKER (p. 67)

Shows the activated alarm range.

- The red marker shows the shallow or deep alarm range.
- The yellow marker shows the fish school alarm range.

16 DEPTH GRADUATION

Shows the depth unit and graduation.

17 TIME MARK (p. 63)

Appears every 30 seconds for your reference.

18 TRACK ON/OFF INDICATOR (p. 23)

Shows the track function condition.

19 VESSEL POSITION READOUT (p. 20)

Shows your vessel position in Lat/Lon or TD.

4-2 Basic settings

■ Depth range setting

Depth range is the displayed water depth range on the CRT.

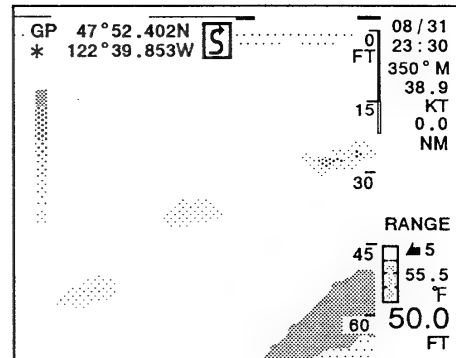
Set the depth range of the display properly.

- Too narrow a setting shows no bottom figure and too wide a setting shows a narrow water range.

- 1) Push [RANGE/SHIFT].
 - "RANGE" appears.
- 2) Rotate the dial to set the proper depth range.
 - The depth graduation shifts.

The following 3 units can be used: These units should be selected in the set mode. (p. 7)

- M (Meters)
- FT (Feet)
- FM (Fathoms)



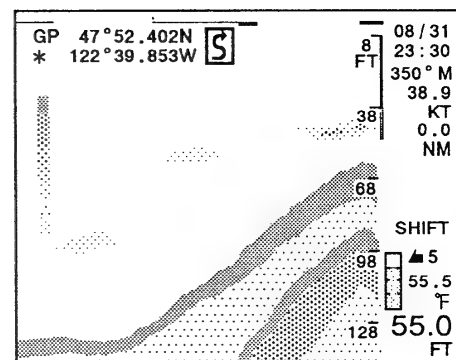
■ Phase shift setting

Phase shift will shift the set depth range in a deeper direction. Set the phase shift at the point where the depth range of the display should begin.

If a 10 FT phase shift is set while 0 ~ 120 FT depth range has been set, the CRT screen shows a 10 ~ 130 FT depth range display.

When you want to observe the display from the outer layer (surface) to the bottom, set the phase shift to "0."

- 1) Push and hold [RANGE/SHIFT] for 3 sec.
 - "SHIFT" appears.
- 2) Rotate the dial to set the desired phase shift.
 - The depth graduation shifts.
 - When the phase shift is set improperly, error message, "X" appears.

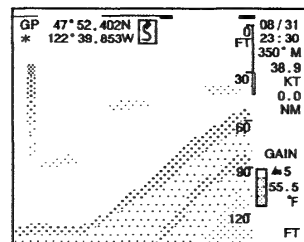


Sensitivity adjustment

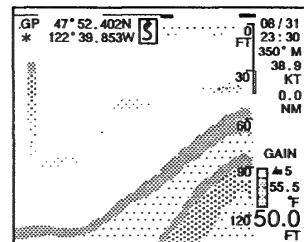
Sensitivity is a very important factor in obtaining the best picture. Sensitivity is adjusted against the signal reflecting from the sea bottom. BE SURE to adjust the sensitivity.

- 1) Push [GAIN/STC]
 - "GAIN" appears.
- 2) Rotate the dial to adjust the sensitivity.
 - Rotating the dial right increases the sensitivity gain.
 - Rotating the dial left decreases the sensitivity gain.

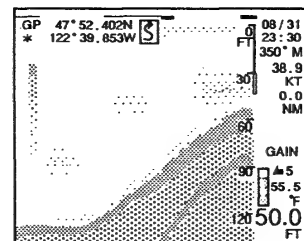
Set the sensitivity so that the sea floor becomes reddish-brown and the sea noise (blue) is eliminated.



Too low



Correct



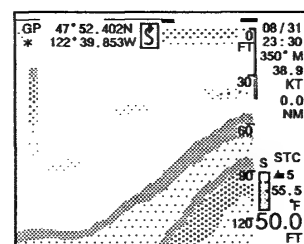
Too high

Sensitivity of outer layer adjustment

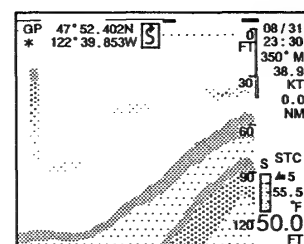
STC (Sensitivity Time Control) can erase the outer layer noise caused by bubbles. To remove noise and to obtain a clear picture, STC decreases the sensitivity of the outer layer.

- 1) Push and hold [GAIN/STC] for 3 sec.
 - "STC" appears.
- 2) Rotate the dial to adjust the STC.
 - Rotating the dial right increases the STC gain.
 - Rotating the dial left decreases the STC gain.

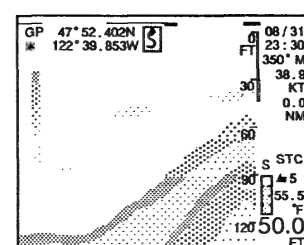
NOTE: If STC is set at too high a gain, the sensitivity of a shallow sea bottom is affected. STC is not effective when the phase shift is set to more than 5 m.



Too low



Correct



Too high

4-3 Advanced settings

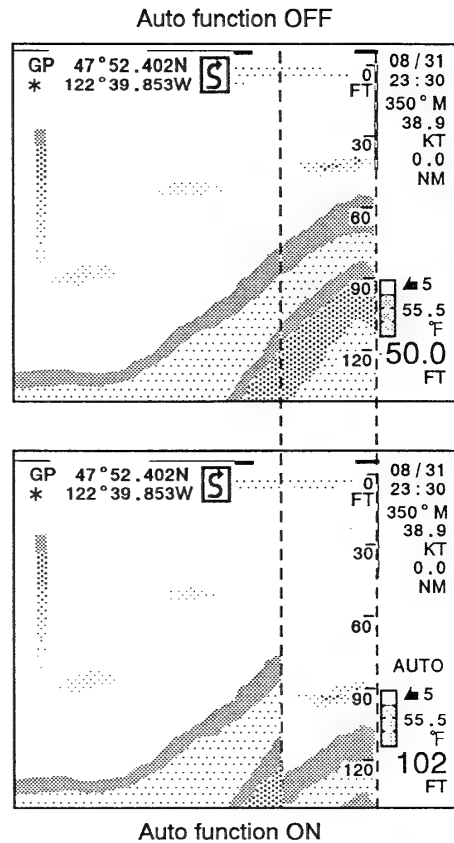
■ Auto function

The auto function controls depth range and sensitivity automatically.

When the auto function is activated, manual adjustment is not necessary for the depth range and sensitivity.

- 1) Make sure the sensitivity, STC, and depth range have suitable values.
- 2) Push [GAIN/STC] and [RANGE/SHIFT] simultaneously.
 - Red "AUTO" appears.
 - [GAIN], [RANGE] and [SHIFT] cannot be used when this function is activated.
- 3) To cancel the function, push [GAIN/STC] and [RANGE/SHIFT] simultaneously again.
 - "AUTO" disappears.

NOTE: While the auto function has been activated, STC can be used to adjust the sensitivity of the outer layer. To use the STC, push and hold [GAIN/STC] until "STC" appears on the display.

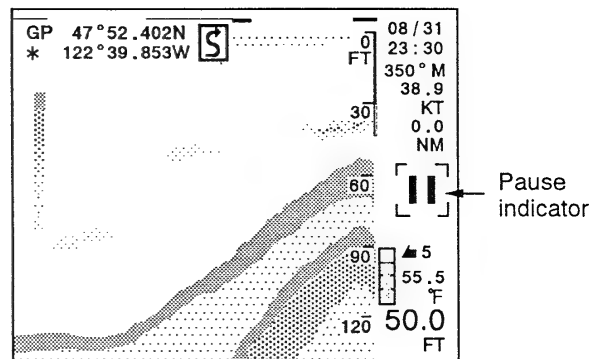


■ Pause function

The display movement can be paused (frozen) at a desired point. This is convenient for observing fish schools, the sea bottom, etc.

Push [PAUSE] to pause the display movement when you desire. To resume the display movement, push [PAUSE] again.

NOTE: To stop (not pause) the display movement, set the display speed to "0." See p. 60 for details.



SOUNDER

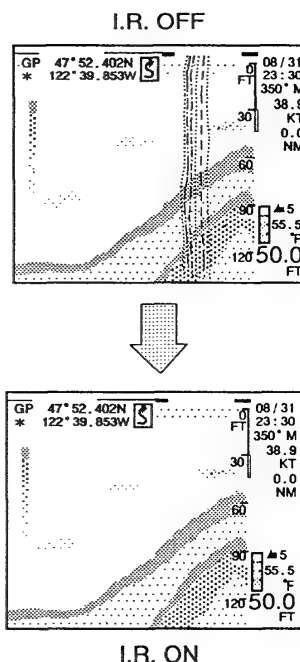
4-4 Sounder menus

The FP-601 includes 8 advanced functions for the sounder as described on pgs 59 ~ 62.

Interference rejection

This function reduces the interference from other video sounders or from the generator of your ship. It can be turned ON or OFF for your convenience.

- 1) Push [MENU] to select the menu mode.
- 2) Select "VIDEO SOUNDER" by rotating the dial; then, push [SET].
 - Pushing [3] also performs this function.
 - Sounder menu window appears.
- 3) Select "I.R." (Interference Rejection) by rotating the dial; then, push [SET].
 - Pushing [1] also performs this function.
 - "I.R." turns green.
- 4) Rotate the dial to select "ON" or "OFF".
- 5) Push [SET] to set the condition.
 - "I.R." turns yellow.



Noise reduction

This function suppresses background noise caused by dirty water, etc. Select the desired reduction level from 1 ~ 5 or OFF.

- 1) Push [MENU] to select the menu mode.
- 2) Select "VIDEO SOUNDER" by rotating the dial; then, push [SET].
 - Pushing [3] also performs this function.
 - Sounder menu window appears.
- 3) Select "N.R." (Noise Reduction) by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - "N.R." turns green.
- 4) Rotate the dial to select the desired level or OFF.
- 5) Push [SET] to set the condition.
 - "N.R." turns yellow.

LEVEL	DESCRIPTION	FUNCTION
1	Min. noise reduction	Blue noise reduced.
2	{	Gray noise reduced.
3		Cyan noise reduced.
4		Green noise reduced.
5	Max. noise reduction	Light green noise reduced.

Setting
part

SOUNDER MENU		
1.	I.R.	OFF
2.	N.R.	ON
3.	DSP SPEED	5
4.	BTM DISCR	OFF
5.	EXPAN RANGE	16FT
6.	BKG COLOR	BLUE
7.	DEPTH SCALE	OFF
8.	DATA INDIC	ON
<div> EXIT MENU PREV </div>		

NOTE: If the noise reduction is set to level 4 or 5, small fish schools may not be displayed on the screen.

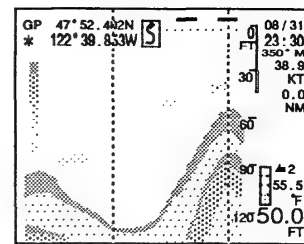
■ Display speed setting

The sweep speed of the display can be adjusted through 6 steps. Moreover, speed synchronization is possible.

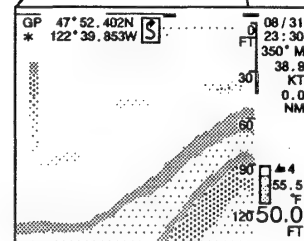
- When high speed is selected, the display is expanded horizontally for easy analysis.
- When slow speed is selected, the display is reduced horizontally.

- 1) Push [MENU] to select the menu mode.
- 2) Select "VIDEO SOUNDER" by rotating the dial; then, push [SET].
 - Pushing [3] also performs this function.
 - Sounder menu window appears.
- 3) Select "DSP SPEED" by rotating the dial; then, push [SET].
 - Pushing [3] also performs this function.
 - "DSP SPEED" turns green.
- 4) Rotate the dial to select the desired speed from 0 to 5 or select "SYNC" for synchronization.
 - The larger the number, the higher the speed.
- 5) Push [SET] to set the speed.
 - "DSP SPEED" turns yellow.

Level 2



Level 4

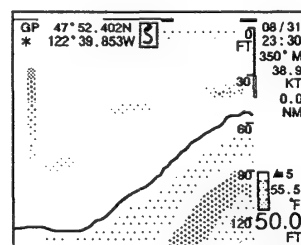


LEVEL	DISPLAY SWEEP SPEED
0	Freeze
1	Slow
2 ~ 4	1
5	Fast
SYNC	Synchronized to vessel speed

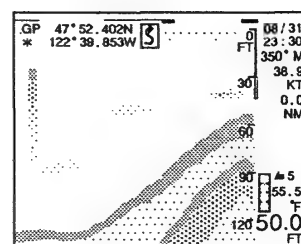
■ Bottom discrimination

The bottom discrimination function removes the color of the sea bottom (reddish brown, red and purple) for easy discrimination of fish schools. This function can be turned ON or OFF for your convenience.

- 1) Push [MENU] to select the menu mode.
- 2) Select "VIDEO SOUNDER" by rotating the dial; then, push [SET].
 - Pushing [3] also performs this function.
 - Sounder menu window appears.
- 3) Select "BTM DISCR" by rotating the dial; then, push [SET].
 - Pushing [4] also performs this function.
 - "BTM DISCR" turns green.
- 4) Rotate the dial to select "ON" or "OFF."
- 5) Push [SET] to set the condition.
 - "BTM DISCR" turns yellow.



Bottom discrimination ON



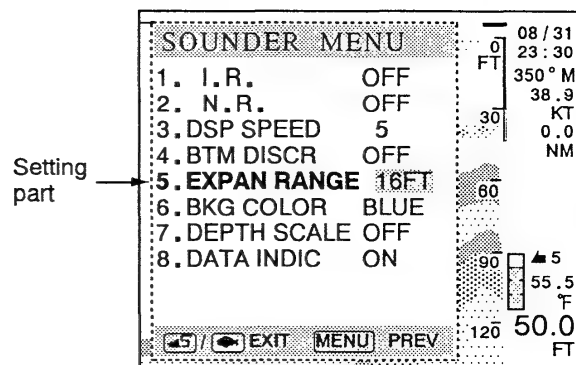
Bottom discrimination OFF

Range of bottom lock

The bottom lock function locks the bottom line horizontally and gives you bottom expansion display for easy observation near the sea bottom.

The range of the bottom lock expansion display can be adjusted through 6 steps.

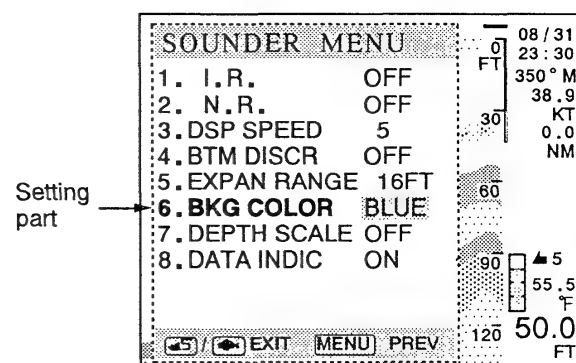
- 1) Push [MENU] to select the menu mode.
- 2) Select "VIDEO SOUNDER" by rotating the dial; then, push [SET].
 - Pushing [3] also performs this function.
 - Sounder menu window appears.
- 3) Select "EXPAN RANGE" by rotating the dial; then, push [SET].
 - Pushing [5] also performs this function.
 - "EXPAN RANGE" turns green.
- 4) Rotate the dial to select the desired range.
- 5) Push [SET] to set the range.
 - "EXPAN RANGE" turns yellow.



Display background color

Dark blue or black can be selected as a background color.

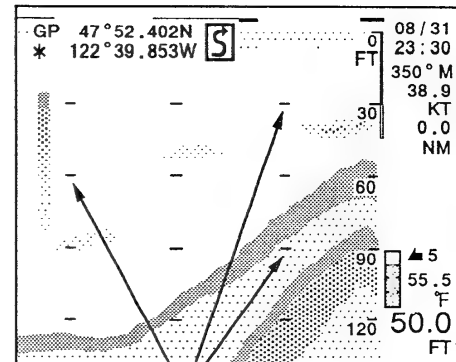
- 1) Push [MENU] to select the menu mode.
- 2) Select "VIDEO SOUNDER" by rotating the dial; then, push [SET].
 - Pushing [3] also performs this function.
 - Sounder menu window appears.
- 3) Select "BKG COLOR" by rotating the dial; then, push [SET].
 - Pushing [6] also performs this function.
 - "BKG COLOR" turns green.
- 4) Rotate the dial to select "BLUE" or "BLACK."
- 5) Push [SET] to set the color.
 - "BKG COL" turns yellow while the background color simultaneously changes color.



Depth scale

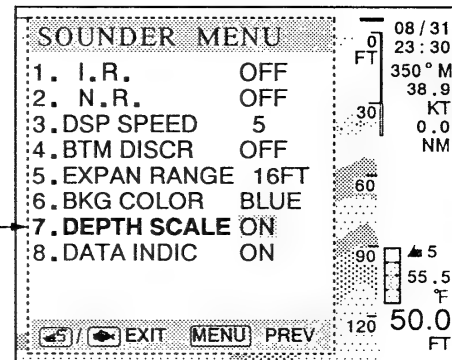
The depth scale indication can be turned ON and OFF. The depth scale is convenient for rough measurement of water depth.

- 1) Push [MENU] to select the menu mode.
- 2) Select "VIDEO SOUNDER" by rotating the dial; then, push [SET].
 - Pushing [3] also performs this function.
 - Sounder menu window appears.
- 3) Select "DEPTH SCALE" by rotating the dial; then, push [SET].
 - Pushing [7] also performs this function.
 - "DEPTH SCALE" turns green.
- 4) Rotate the dial to select "ON" or "OFF."
- 5) Push [SET] to set the condition.
 - "DEPTH SCALE" turns yellow.



Depth scale

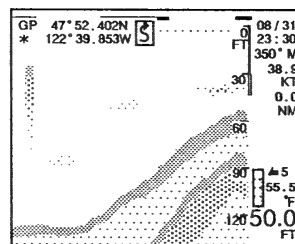
Setting part



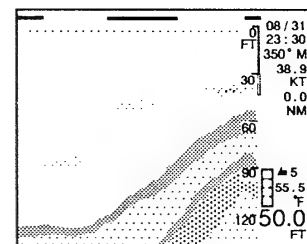
Data indication

The color bar and data indication can be turned ON and OFF.

- 1) Push [MENU] to select the menu mode.
- 2) Select "VIDEO SOUNDER" by rotating the dial; then, push [SET].
 - Pushing [3] also performs this function.
 - Sounder menu window appears.
- 3) Select "DATA INDIC" by rotating the dial; then, push [SET].
 - Pushing [8] also performs this function.
 - "DATA INDIC" turns green.
- 4) Rotate the dial to select "ON" or "OFF."
- 5) Push [SET] to set the condition.
 - "DATA INDIC" turns yellow.

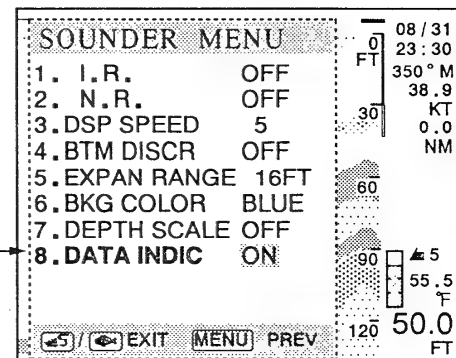


Data indication ON



Data indication OFF

Setting part



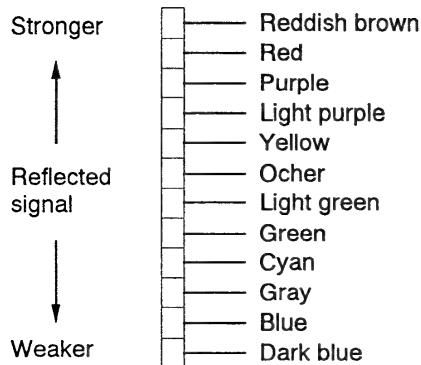
4-5 Display interpretation

■ Color bar and time mark

• Color bar

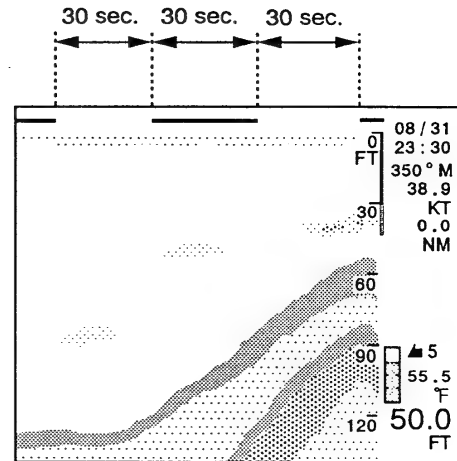
The FP-601 displays the intensity of the echo signal in 12 colors as in the following diagram.

- The color bar can be turned off in the menu mode. See p. 62 "Data indication" for details.
- The background color can be selected in dark blue or black. See p. 61 for details.



• Time mark

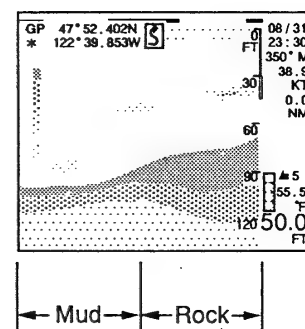
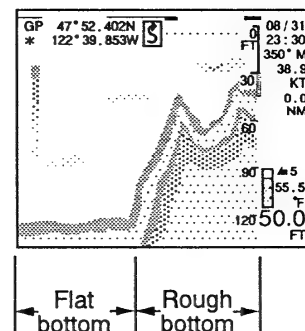
The time mark is displayed every 30 sec. on the upper part of the screen. The time mark indicates elapsed time.



■ Echo from the sea bottom

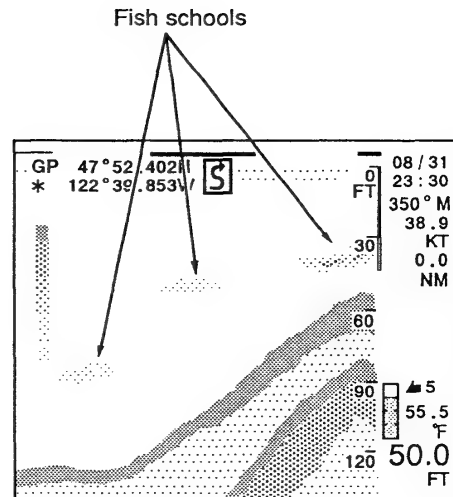
Echoes from the sea floor are normally the strongest and are displayed in reddish brown, but the color and width will vary with bottom composition, water depth, frequency, sensitivity, etc.

The color and width of the bottom echo can be used to help determine the density of the bottom material (soft or hard). The harder the bottom, the wider the trace. If the gain is set to show only a single bottom echo on mud, a rocky bottom will show a second or third bottom return.



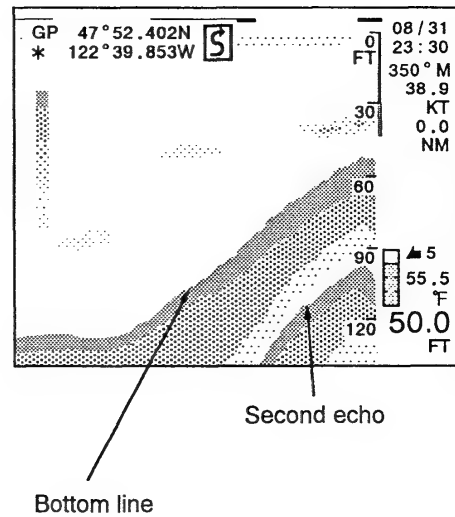
■ Fish school echoes

Fish schools will generally be plotted between the surface and the sea bottom. Usually the fish school/fish echo is weaker than the bottom echo because the reflecting surface area and the reflection proper are much smaller compared to the bottom. The size of the fish school can be ascertained from the density of the display.



■ Second echo

At relatively shallow depths, a high gain setting and a strong bottom echo will cause a second or sometimes, a third or fourth echo, to be displayed in the same interval below the first echo trace. This is because the echo travels between the sea floor and surface two or more times in shallow depths.

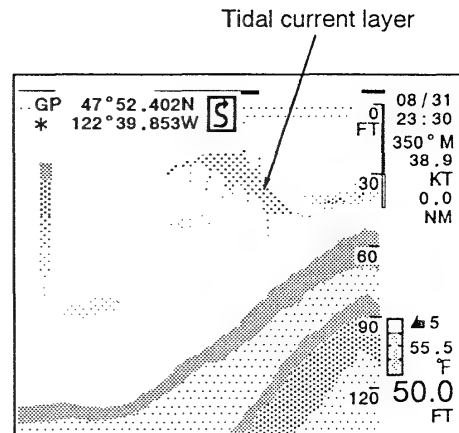
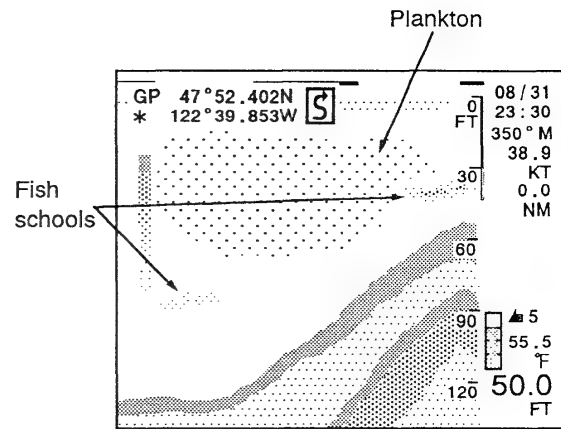


■ Plankton and tidal current

A plankton layer is made up of masses of marine microbes which are displayed as cloud-like layers between the surface and the sea bottom and may cover a wide depth range.

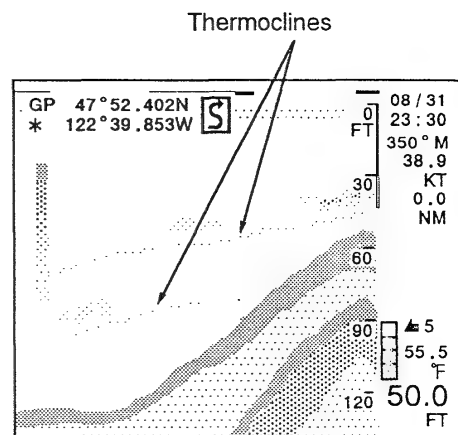
Plankton are an important link in the food chain for most game fish and locating their position can be quite beneficial to productive fishing. Plankton are sensitive to light and, as a result, swim to deep water during daylight and rise to shallower depths at night.

The picture of the tidal current layer is similarly sloped to that of the plankton layer, however, unlike the plankton layer, it is not spread over a wide depth range.



■ Thermoclines

Thermoclines are layers formed between areas of water at different temperatures. The temperature breakline will sometimes reflect an echo back to the transducer and will appear on the display as a very thin and weak line between the surface and the sea bottom.



■ Aeration

When the vessel sails in its own wake as it goes astern or when it sails in waves of a rough sea, aerated water may cover the face of the transducer. The bottom line may not be displayed due to a reduction in transmission/reception sensitivity of the ultrasonic waves.

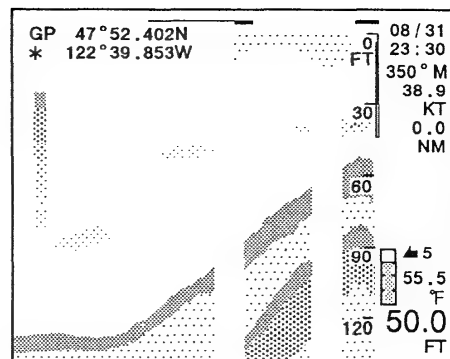
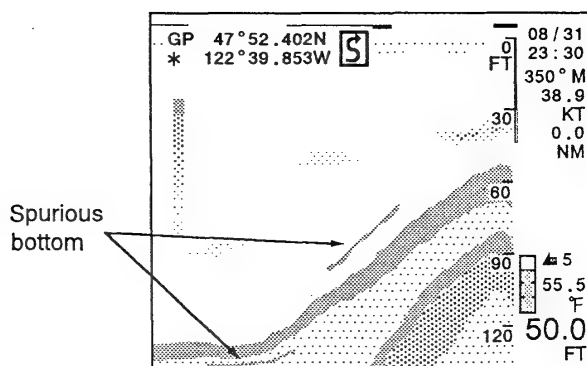
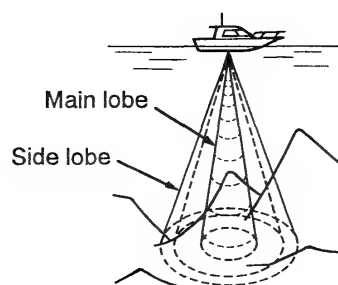


Image caused by aerated water

■ Spurious bottom lines by side lobes

Spurious bottom lines may appear because the transducer has side lobes.

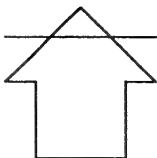
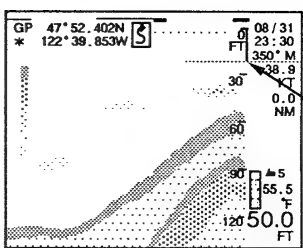
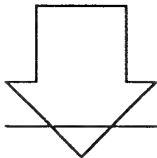
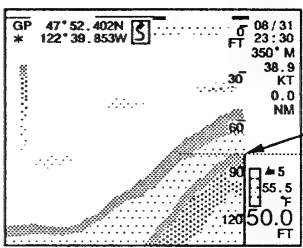
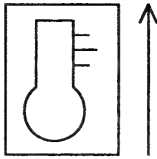
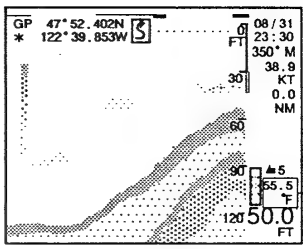
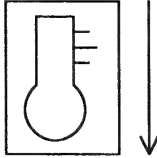
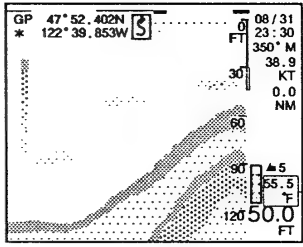
They appear as weak lines above a rough bottom, or as weak lines beneath a flat bottom.



4-6 Sounder alarms


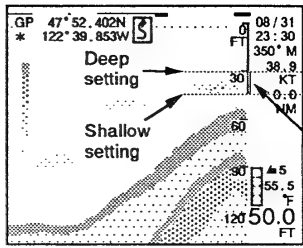
■ Alarm types

The FP-601 has 4 types of sounder alarms to suit your operating needs.

ALARM	INDICATION	FUNCTION	EXAMPLE
Shallow		The alarm sounds when the sea bottom appears shallower than the shallow alarm setting.	
Deep		The alarm sounds when the sea bottom appears deeper than the deep alarm setting.	
Temperature (up)		The alarm sounds when the water temperature goes above a pre-set high temperature. (An optional temperature sensor is necessary).	
Temperature (down)		The alarm sounds when the water temperature goes below a pre-set low temperature. (An optional temperature sensor is necessary).	

• Combination alarm

The fish school alarm consists of a shallow and a deep alarm.

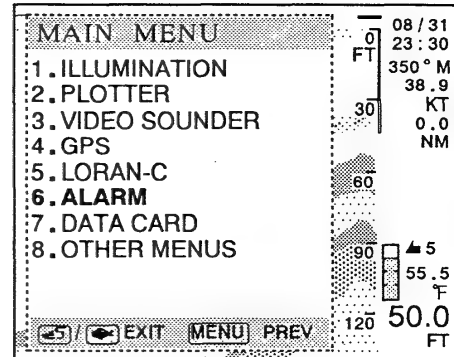
ALARM	INDICATION	FUNCTION	EXAMPLE
Fish school		The alarm sounds when a fish school appears in the watching range.	

Alarm setting

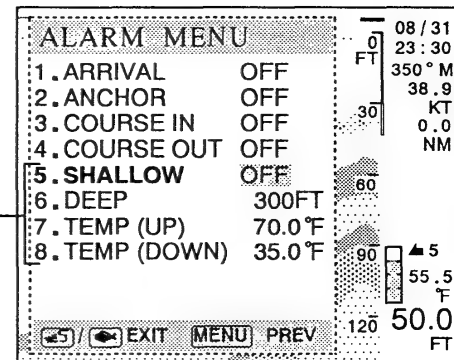
Set the desired alarm. Multiple alarms can be activated simultaneously.

- 1) Push [MENU] to select MENU mode.
- 2) Rotate the dial to select "ALARM," then push [SET].
 - Pushing [6] also performs this function.
 - The alarm menu window appears.
- 3) Rotate the dial to select the desired alarm, then push [SET].
 - Digit keys can also be used to select an alarm.
 - Numbers 1 ~ 4 are plotter alarms.
- 4) Rotate the dial to select the values (not "OFF"), then enter the desired depth value or temperature with the digit keys.
 - To cancel the setting, select "OFF."
 - The units of depth and temperature can be changed in the set mode. (p. 7)
 - To set the fish school alarm, set the shallow alarm to deep and deep alarm to shallow. Both alarms must be set.
- 5) Push [SET] to set the alarm.
 - The alarm is activated.
- 6) When setting more than one alarm, repeat steps 3 ~ 5 above.
- 7) Push [←S] or [←F] to exit the menu mode.

NOTE: The fish school alarm is activated with the shallow alarm simultaneously.



Sounder alarms



SOUNDER

Alarm operation

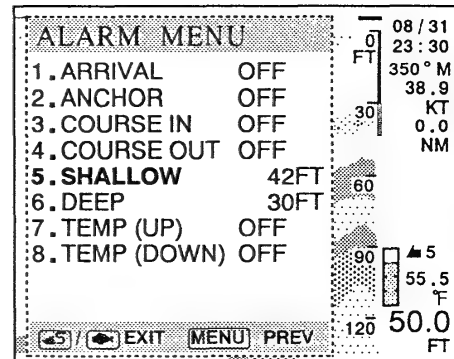
When the water depth or the temperature meets a pre-set condition, the alarm sounds.

To stop the alarm sound, push [CLR].

NOTE 1: If the sea bottom or the temperature meets a pre-set condition again, the alarm sounds again.

NOTE 2: The fish school alarm keeps sounding until the fish school disappears even if [CLR] is pushed.

To cancel the alarm setting, select "OFF" in step 4 of the above box.



This example shows the fish school alarm is activated.

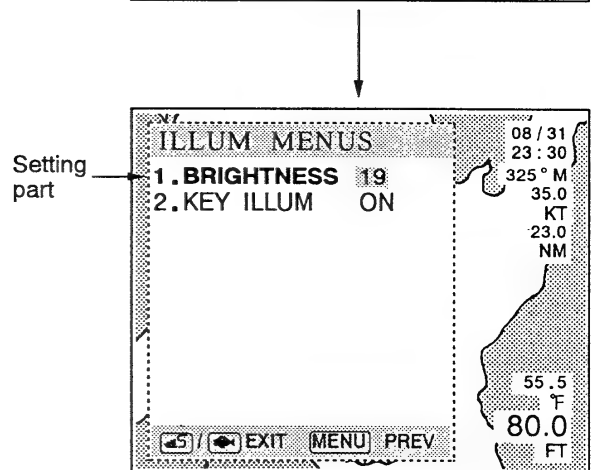
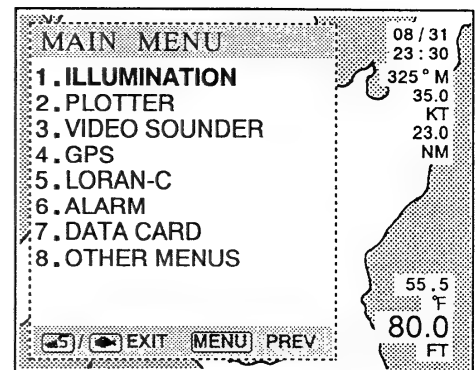
5 COMMON FUNCTIONS

■ CRT brightness

There are 25 brightness levels for the CRT. Select the desired intensity to suit your operating conditions.

- 1) Push [MENU] to select the menu mode.
- 2) Select "ILLUMINATION" by rotating the dial; then, push [SET].
 - Pushing [1] also performs this function.
 - The illumination menu window appears.
- 3) Select "BRIGHTNESS" by rotating the dial; then, push [SET].
 - Pushing [1] also performs this function.
 - "BRIGHTNESS" turns green.
- 4) Rotate the dial to select the desired level.
 - The higher the number, the brighter the CRT.
- 5) Push [SET] to set the condition.
- 6) Push [←5] or [→5] to exit the menu mode.

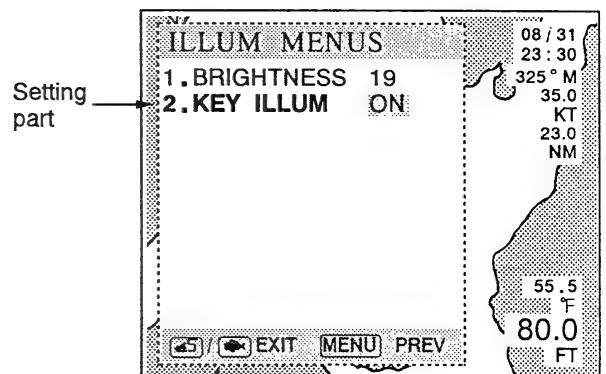
NOTE: While the opening display appears after the power ON, CRT brightness can be adjusted by rotating the dial.



■ Key illumination

The keyboard backlighting can be turned ON or OFF for your convenience.



- 1) Push [MENU] to select the menu mode.
- 2) Select "ILLUMINATION" by rotating the dial; then, push [SET].
 - Pushing [1] also performs this function.
 - The illumination menu window appears.
- 3) Select "KEY ILLUM" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - "KEY ILLUM" turns green.
- 4) Rotate the dial to select "ON" or "OFF."
- 5) Push [SET] to set the condition.
- 6) Push [←5] or [→5] to exit the menu mode.



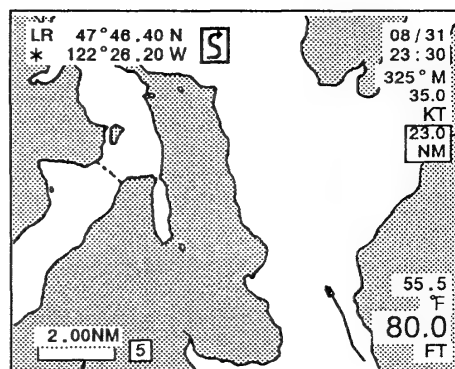
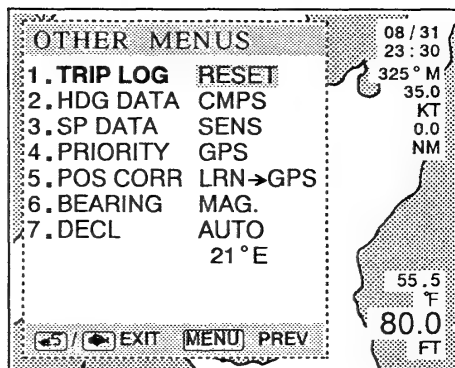
■ Trip log

The trip log can be used for measuring the distance between your present position and a future position.

This function can be performed at any time. When you want to start counting, proceed as follows:

- 1) Push [MENU] to select the menu mode.
- 2) Select "OTHER MENUS" by rotating the dial; then, push [SET].
 - Pushing [8] also performs this function.
 - The other menus window appears.
- 3) Make sure that "SENS" is selected for the "3. SP DATA."
 - See p. 71 for selection details.
- 4) Select "TRIP LOG" by rotating the dial; then, push [SET].
 - Pushing [1] also performs this function.
 - "TRIP LOG" turns green.
- 5) Rotate the dial to select "RESET."
- 6) Push [SET] to start counting.
 - "RESET" changes to "COUNT" and counting starts.
- 7) Push [] or [] to exit the menu mode.

NOTE: A speed sensor is necessary for trip log indication. Icom offers an optional EX-983 SPEED/TEMPERATURE SENSOR.





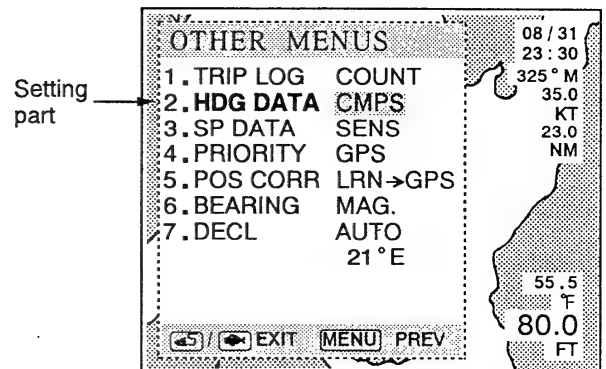
Unit of trip log	NM	km	MI
Unit of vessel speed	KT	km	MI
Variable range	0.0 ~ 999.9	0.0 ~ 999.9	0.0 ~ 999.9

When the trip log counts beyond the variable range, it automatically returns to 0.0 and resumes counting.

■ Heading data

Data from either the compass or the navigation receiver can be designated for heading data.



- 1) Push [MENU] to select the menu mode.
- 2) Select "OTHER MENUS" by rotating the dial; then, push [SET].
 - Pushing [8] also performs this function.
 - The other menu window appears.
- 3) Select "HDG DATA" by rotating the dial; then, push [SET].
 - Pushing [2] also performs this function.
 - "HDG DATA" turns green.
- 4) Rotate the dial to select "CMPS" for data from the compass or "NAV.S" for data from the navigation receiver.
- 5) Push [SET].
 - "HDG DATA" turns yellow.
- 6) Push [] or [] to exit the menu mode.

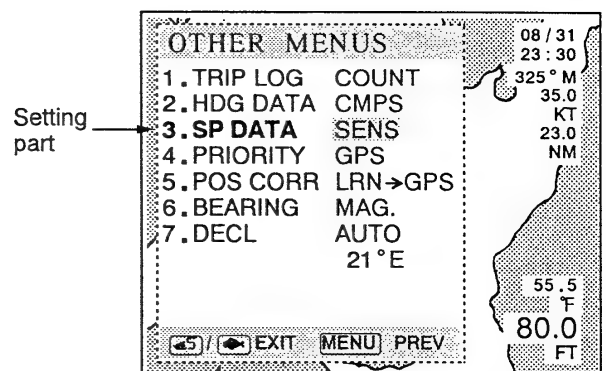


NOTE: When "CMPS" is selected, a compass with "N + 1" format is necessary for heading data indication.

■ Speed data



Data from either the speed sensor or the navigation receiver can be designated for speed data.

- 1) Push [MENU] to select the menu mode.
- 2) Select "OTHER MENUS" by rotating the dial; then, push [SET].
 - Pushing [8] also performs this function.
 - The other menu window appears.
- 3) Select "SP DATA" by rotating the dial; then, push [SET].
 - Pushing [3] also performs this function.
 - "SP DATA" turns green.
- 4) Rotate the dial to select "SENS" for data from the speed sensor or "NAV.S" for data from the navigation receiver.
- 5) Push [SET].
 - "SP DATA" turns yellow.
- 6) Push [] or [] to exit the menu mode.

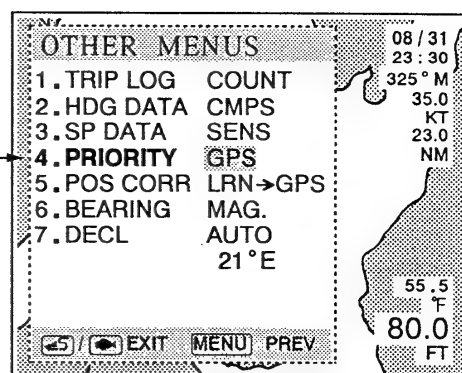


■ GPS/Loran-C priority

When both the RX-1191 LORAN-C RECEIVER UNIT and the GP-2000 GPS RECEIVER UNIT are connected, you can select the priority data.

- 1) Push [MENU] to select the menu mode.
- 2) Select "OTHER MENUS" by rotating the dial; then, push [SET].
 - Pushing [8] also performs this function.
 - The other menu window appears.
- 3) Select "PRIORITY" by rotating the dial; then, push [SET].
 - Pushing [4] also performs this function.
 - "PRIORITY" turns green.
- 4) Rotate the dial to select "GPS" or "LRN."
- 5) Push [SET].
 - "PRIORITY" turns yellow.
- 6) Push [] or [] to exit the menu mode.

Setting
part





■ Positioning correction

When the data from the connected navigation receiver is not accurate, the data can be adjusted to match more accurate data.



- 1) Push [MENU] to select the menu mode.
- 2) Select "OTHER MENUS" by rotating the dial; then, push [SET].
 - Pushing [8] also performs this function.
 - The other menu window appears.
- 3) Select "POS CORR" by rotating the dial; then, push [SET].
 - Pushing [5] also performs this function.
 - "POS CORR" turns green.
- 4) Rotate the dial to select the navigation receiver sending incorrect data to the left side of the arrow and select an accurate data source to the right side of the arrow.
 - Left "GPS" shows the data from the GP-2000 GPS RECEIVER UNIT will be corrected.
 - Left "LRN" shows the data from the RX-1191 LORAN-C RECEIVER UNIT will be corrected.

- Right "GPS" shows GP-2000 data is being used as the data source.
- Right "LRN" shows RX-1191 data is being used as the data source.
- Right "EXT" shows data from an external (non-lcom) navigation receiver is being used as the data source.
- Right "CUR" shows the cursor position is being used for data correction.

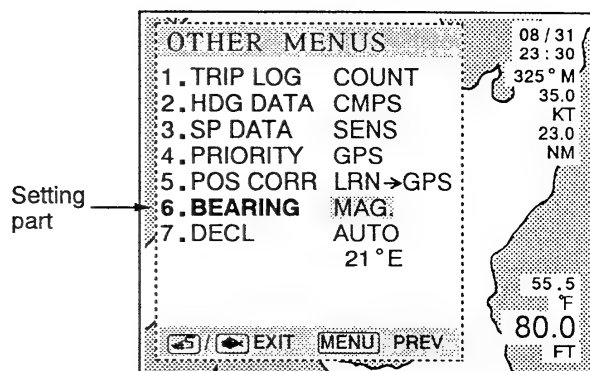
- 6) Push [SET].
 - If an error message appears with a beep, a navigation receiver not connected to your FP-601 has been selected.
 - "POS.CORRECT" turns yellow.
- 7) Push [] or [] to exit the menu mode.

True or magnetic bearing

The heading, waypoint bearing, cursor direction, etc. for display can be selected as the true bearing or magnetic bearing.



- 1) Push [MENU] to select the menu mode.
- 2) Select "OTHER MENU" by rotating the dial; then, push [SET].
 - Pushing [8] also performs this function.
 - The other menu window appears.
- 3) Select "BEARING" by rotating the dial; then, push [SET].
 - Pushing [6] also performs this function.
 - "BEARING" turns green.
- 4) Rotate the dial to select "TRUE" or "MAG."
- 5) Push [SET].
- 6) Push [] or [] to exit the menu mode.

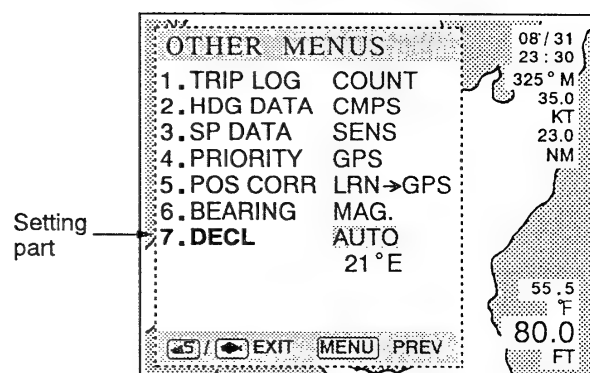
When you use the FP-601 without a ROM card, declination must be set for magnetic bearing use.



Declination

Each digitalized chart in the ROM card has a declination value for magnetic bearing. When you use the FP-601 without a ROM card or if you wish to change the value, manual setting is necessary.







- 1) Push [MENU] to select the menu mode.
- 2) Select "OTHER MENU" by rotating the dial; then, push [SET].
 - Pushing [8] also performs this function.
 - The other menu window appears.
- 3) Select "DECL" by rotating the dial; then, push [SET].
 - Pushing [7] also performs this function.
 - "DECL" turns green.
- 4) Rotate the dial to select "AUTO" or "MANU."
 - Declination value under "AUTO" is fixed depending on the selected chart.
 - When selecting "MANU," enter magnetic variation with the digit keys and [SELECT].
- 5) Push [SET].
- 6) Push [] or [] to exit the menu mode.



Built-in simulator

The FP-601 includes a built-in simulator for operator training or checking functions. The simulator is activated for both the plotter and sounder modes.

• Activating the built-in simulator

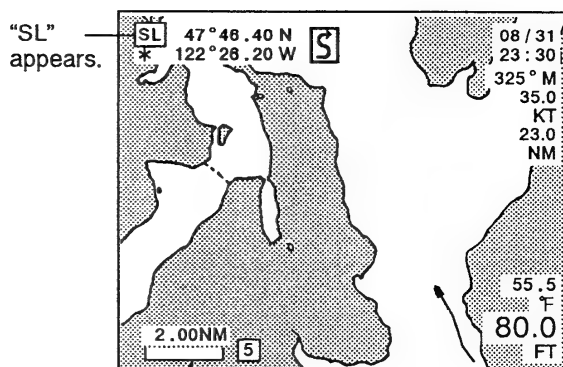
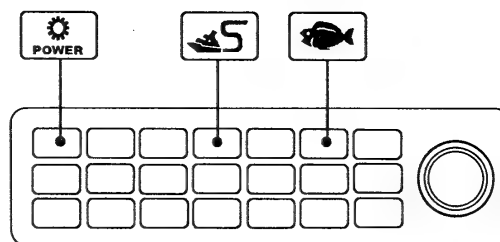
- 1) Turn the power OFF.
- 2) While simultaneously pushing [] and [], push [POWER] to turn power ON; keep pushing [] and [] until a single beep sounds.
- 3) Release [] and [].
 - Opening display appears and the simulator is activated.
 - "SL" is displayed as a navigation receiver.

On the plot screen, the simulated vessel moves and changes direction in 45° steps depending on the dial rotation.

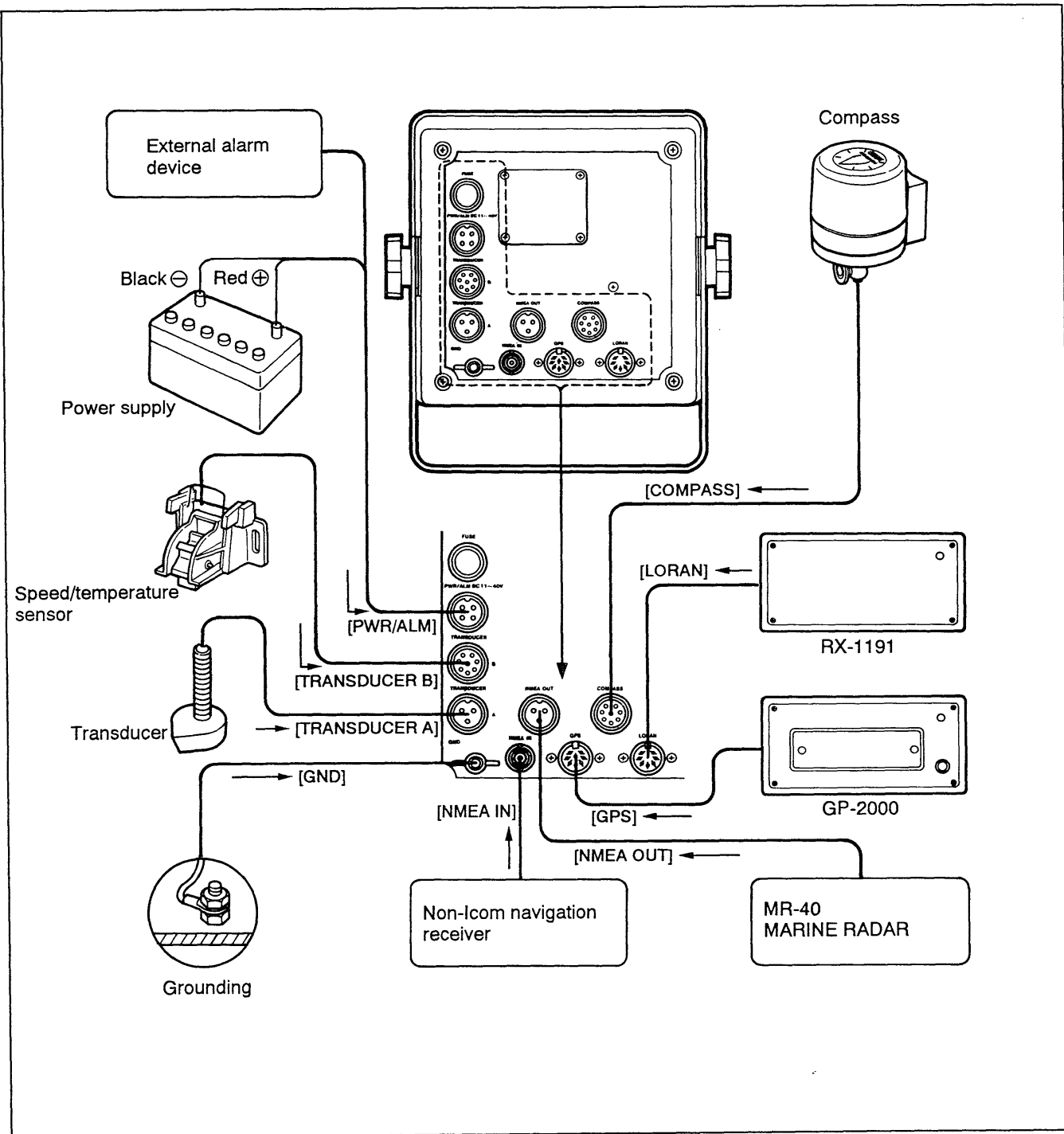
Once the power is turned OFF, the simulator is deactivated. If you want to activate the simulator again after the power is OFF, repeat steps 1 ~ 3 above.

NOTE 1: For the plotter, while "SL" is displayed, the positioning data from the simulator is displayed. If you designate the connected navigation receiver, the positioning data from the connected navigation receiver is displayed instead of the positioning data from the simulator.

NOTE 2: For the sounder, regardless of the "SL" indication, a simulated bottom is displayed instead of the real bottom until the power OFF.



System connections

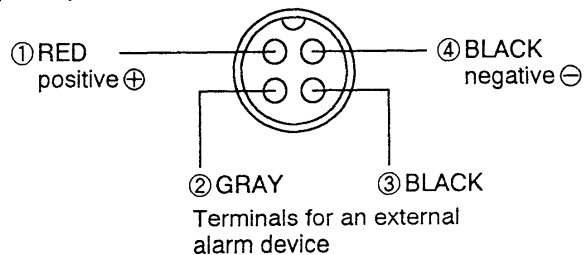


• Power cable

- 1) Connect the supplied power cable to the vessel's battery (11~40 V DC acceptable).
• Red: ⊕ Black: ⊖
- 2) Connect the power cable connector to the [PWR/ARM] connector of the FP-601.
- 3) Ground the [GND] terminal with a short, heavy gauge wire.

POWER CONNECTOR

(Rear panel view)



• Transducer, speed sensor and temperature sensor

When using a separate transducer and speed/temperature sensor:

- Connect the cable from the transducer to the [TRANSDUCER A] jack.
- Connect the cable from the speed/temperature sensor to the [TRANSDUCER B] jack.

When using a transducer equipped with a speed/temperature sensor such as the EX-1010, connect the cable to the [TRANSDUCER B] jack.

WARNING: NEVER try to install a transducer by yourself. Drilling your vessel may be necessary for installation. If the transducer is installed incorrectly, the vessel will sink in the worst case scenario. **BE SURE** to ask your dealer to install the transducer.

• Navigation receivers

Connect your navigation receiver as shown in the diagram on the left page.

- To use the GP-2000, connect the FP-601, via the GPS cable (OPC-311; optional), to the [GPS] jack.
- To use the RX-1191, connect the FP-601, via the cable (OPC-330; supplied to the RX-1191), to the [LORAN] jack.
- To use a non-Icom navigation receiver, connect the cable from the receiver to the [NMEA IN] jack with a BNC connector.
 - The FP-601 accepts NMEA 0182 or 0183 formats.

For navigation receiver details, see the instruction manual of your navigation receiver.

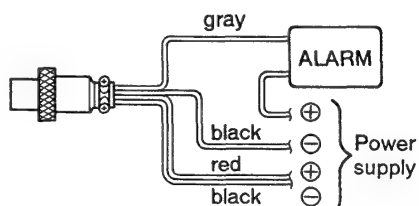
NOTE: When you use the GP-2000:

- Select RS-232C format (not RS-232C continuous output) in the GP-2000.
- DO NOT connect the DC power to the power terminals of the GP-2000 since the GPS cable controls receiver power.

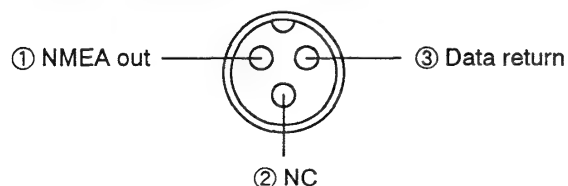
• External alarm device

An external alarm device can be connected to the [PWR/ARM] jack with the supplied power cable.

NOTE: The internal relay unit (Max. 1A) is connected to the [PWR/ARM] jack. The relay is turned ON when the alarm sounds.

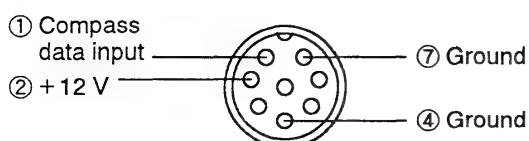


• NMEA output connector

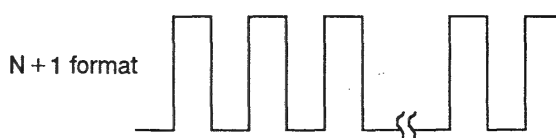


An optional OPC-285 NMEA CABLE is available to connect the FP-601 to the MR-40 MARINE RADAR.

• Compass connector



The input data format must be N + 1 format.



■ Installation

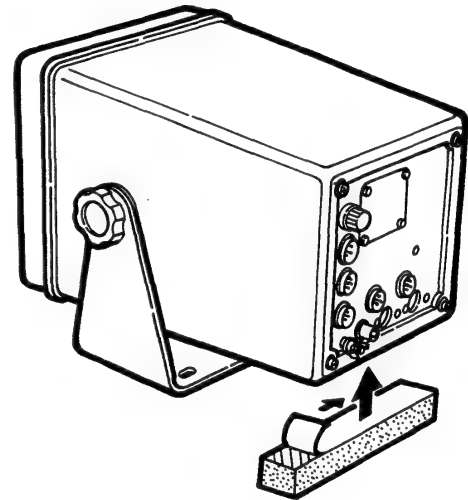
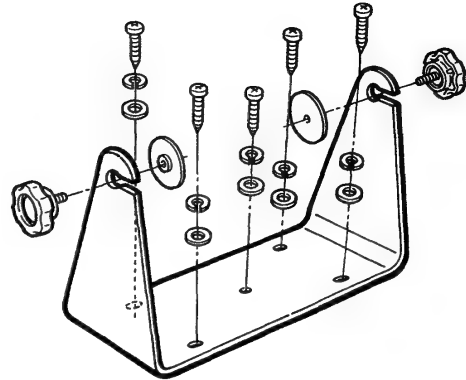
• Main body

Set the FP-601 in a desired location where viewing and controlling can be performed easily. The supplied universal bracket allows "dashboard," "overhead" or "Screen-up" mounting.

CAUTION: NEVER set the FP-601 in the following locations:

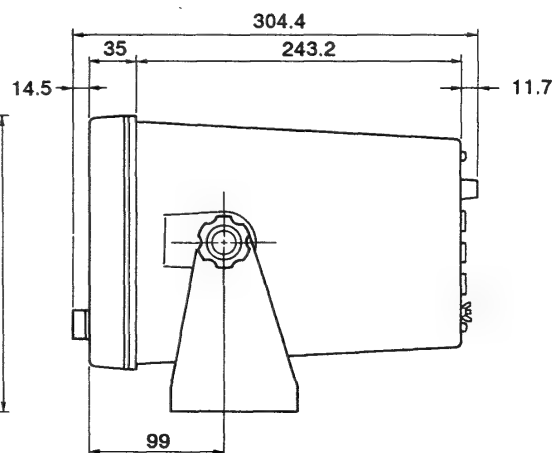
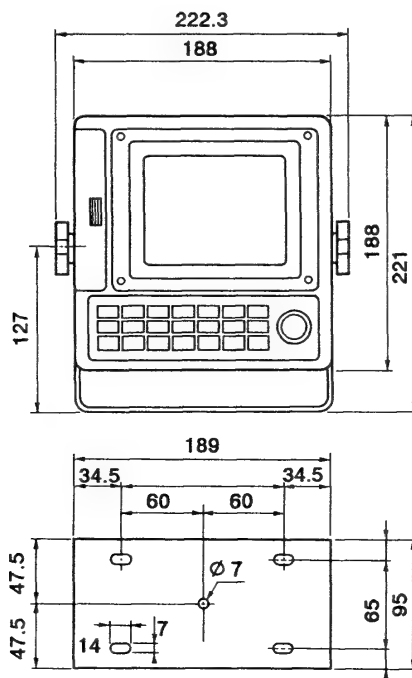
- Where salt or fresh water could spray on it.
- Where extreme heat, cold, vibration or a dry environment could damage it.
- Where the weight of the FP-601 cannot be supported.
- Where vessel operation could be hindered.
- Where the plotter could cause bodily injury.

- 1) When selecting location, refer to "Body size" below.
- 2) Drill 5 holes (diameter 4 mm; 3/16 in) for bracket attachment.
- 3) Fix the bracket with the supplied bolts and washers.
- 4) Attach the supplied sponge to the rear side of the plotter bottom panel.
- 5) Attach the FP-601 to the bracket with the supplied mounting knobs and rubber washers.



• Body size

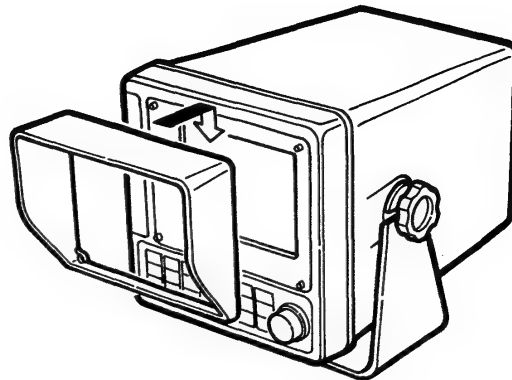
Unit : mm
(10 mm \approx 3/8 in)



• **Viewing hood**

The supplied viewing hood is for daylight use of the FP-601.

- 1) Remove the 4 screws for supporting the CRT protection cover on the front panel.
- 2) Screw in the 4 supplied hood screws in place of the 4 removed screws.
- 3) Attach the supplied viewing hood as shown in the diagram at right.



■ Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
• No power comes on.	<ul style="list-style-type: none"> • Power cable improperly connected. • Blown fuse. 	<ul style="list-style-type: none"> • Reconnect the cable observing the proper polarity. • Check the cause, then replace the fuse with a spare one. 	<p>p. 75</p> <p>p. 80</p>
• No screen appears even when power is ON.	• Dark CRT brightness has been previously selected.	• Rotate the dial clockwise within 10 sec. after power ON.	p. 69
• CRT brightness keeps changing.	• Battery voltage is low.	• Charge the battery.	—
• The screen is distorted.	• Objects nearby with a strong magnetic field.	• Remove the objects.	—
• Data cannot be written in the RAM card.	• Memory protection switch is ON.	• Turn the switch OFF.	p. 43
• No chart appears.	<ul style="list-style-type: none"> • ROM card is not inserted or is not inserted completely. • Initial setting has not been performed. 	<ul style="list-style-type: none"> • Insert the proper card completely. • Perform required initial settings. 	<p>p. vi</p> <p>p. 8</p>
• No ship appears on the chart.	<ul style="list-style-type: none"> • Initial setting has not been performed. • Connected navigation receiver has not been selected. • Navigation receiver has not been connected correctly. 	<ul style="list-style-type: none"> • Perform required initial settings. • Select the connected navigation receiver. • Check the connection to the navigation receiver. 	<p>p. 8</p> <p>p. 20</p> <p>p. 75</p>
• The displayed vessel position differs from the real position.	• Output from connected navigation receiver gives wrong position data.	• Correct the position data on the connected navigation receiver.	pgs. 45–48
• Track is not drawn on the screen.	• The track function has been turned OFF	• Turn the track function ON.	p. 23
• Heading is not displayed.	• Compass is selected as a heading data source and the compass is not connected.	• Select navigation data as a heading data source or connect the compass.	p. 71
• No echo or a weak echo display appears.	<ul style="list-style-type: none"> • Transducer cable has a poor contact. • Sensitivity is set too low. 	<ul style="list-style-type: none"> • Check the connection of the transducer cable. • Check the set sensitivity value. 	<p>p. 75</p> <p>p. 56</p>
• The sea bottom line does not appear on the screen.	<ul style="list-style-type: none"> • Depth range is set incorrectly. • Phase shift is set incorrectly. • The bottom discrimination function has been activated. 	<ul style="list-style-type: none"> • Push [RANGE/SHIFT], then rotate the dial. • Push and hold [RANGE/SHIFT] for 3 sec. then rotate the dial. • Turn the function OFF. 	<p>p. 55</p> <p>p. 55</p> <p>p. 60</p>
<ul style="list-style-type: none"> • Water depth is not indicated. • Bottom lock screen is not displayed. • The auto function cannot be activated. 	<ul style="list-style-type: none"> • Sensitivity is set too low. • Water depth is too deep, and the wave from the transducer does not arrive the sea bottom. 	<ul style="list-style-type: none"> • Push [GAIN/STC], then rotate the dial. • This is not trouble. 	p. 56
• Display does not advance across the sounder screen.	<ul style="list-style-type: none"> • The display speed is set at "0." • The pause function is ON. 	<ul style="list-style-type: none"> • Check the display speed setting. • Push [PAUSE] to turn OFF pausing. 	<p>p. 60</p> <p>p. 57</p>
• Water temperature is not indicated.	• Temperature sensor is not connected.	• Connect the optional EX-983 SPEED/TEMPERATURE SENSOR.	p. 75
• Trip log is not indicated.	<ul style="list-style-type: none"> • Navigation data from the receiver is selected as the speed data. • Speed sensor is not connected. 	<ul style="list-style-type: none"> • Select sensor data as the speed data. • Connect the optional EX-983 SPEED/TEMPERATURE SENSOR. 	<p>p. 71</p> <p>p. 75</p>

Preventive maintenance

WARNING: To avoid an accidental electrical shock, make sure to turn the power OFF before carrying out the preventive maintenance procedures.

Preventive maintenance will keep the FP-601 in good operating condition, and may help reduce service time and expense.

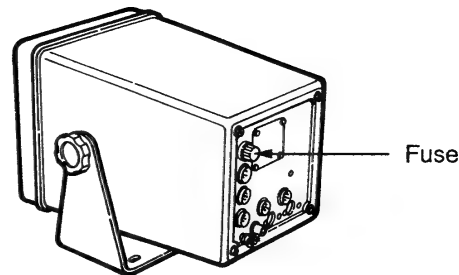
- ① Clean and remove any dirt or dust from the unit cover with a soft, damp cloth and a little soap.
- ② When cleaning the surface of the CRT and its cover, use a soft cloth (cotton or flannel) soaked with an antistatic substance or fresh water.

- ③ Inspect the connectors and the connection to the external equipment for cleanliness and tightness. Make sure the wiring is free from chafing and abrasions.
- ④ Check the cable connection to the vessel's ground for cleanliness. Tighten any loosened screws, bolts and nuts.
- ⑤ Check for evidence of any corrosion or marine growth on the transducer or its cable and connector. The transducer should be cleaned with a neutral detergent and a soft brush so that any foreign material is removed from the face of the transducer.

Fuse replacement

All circuits of the FP-601 are protected by fuses. If the power key is pushed ON, and the FP-601 will not operate, follow this procedure:

- 1) Remove the blown fuse from the fuse holder on the rear panel.
- 2) If possible, correct the problem, and replace with a new rated fuse.



Incorrect display

If the screen shows an incorrect display, or any keys do not function, the internal CPU may be malfunctioning. Memory card connection, static electricity or other factors may cause such a malfunction.

If this problem occurs, turn the power OFF and then check the insertion of the memory card. Wait a few seconds, and then turn the power ON again. If the problem continues, the internal CPU should be reset with the following procedure:

While pushing [CLR] and [%], turn the power ON. Hold the switches until a single beep sounds.

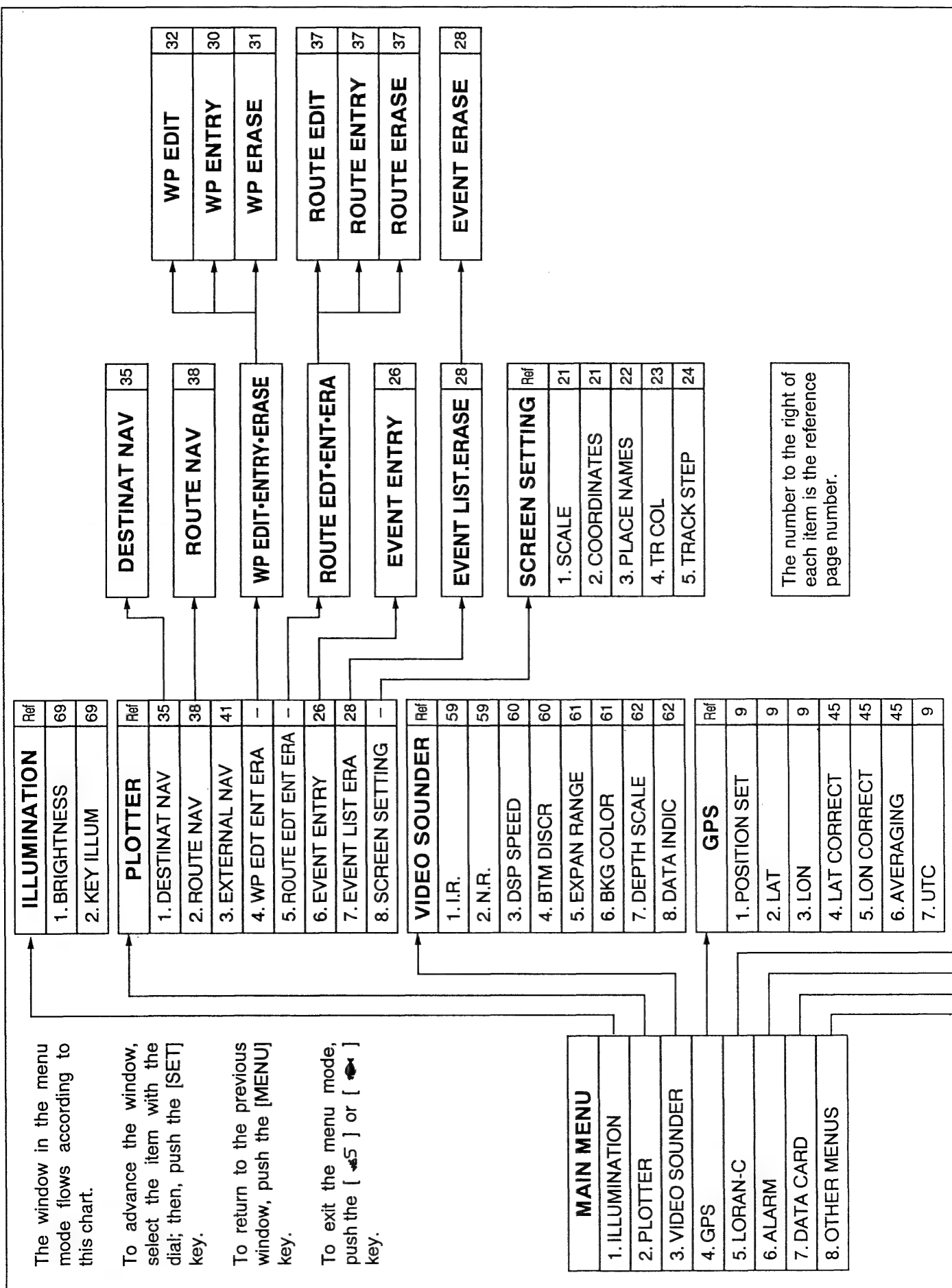
CAUTION: CPU resetting clears all memorized data such as event marks, waypoints, etc. However, the data programmed in a data card is saved.

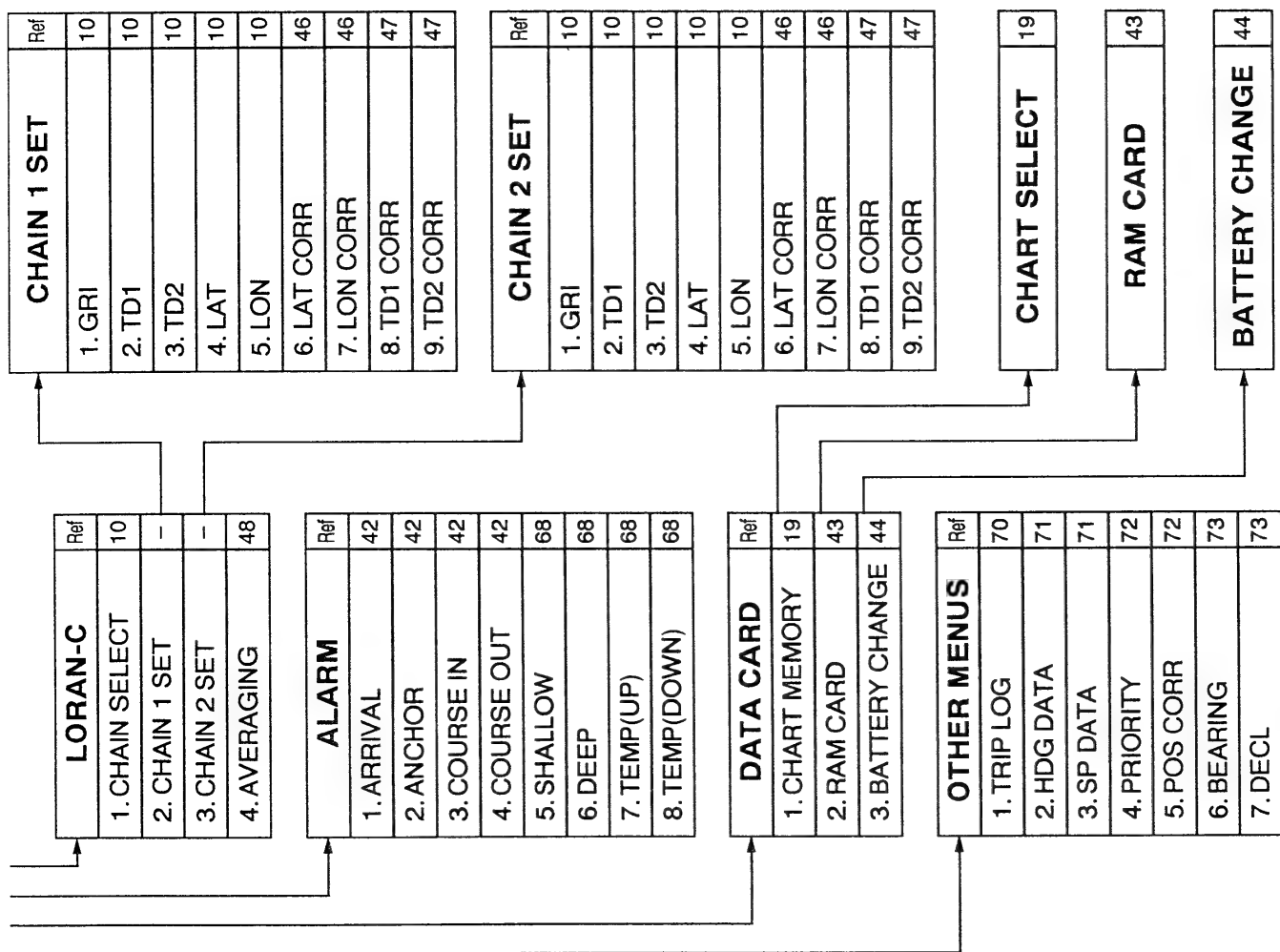
Backup battery

The programmed data such as event marks, routes, tracks, etc. are memorized in the plotter. This data is retained by a lithium backup battery.

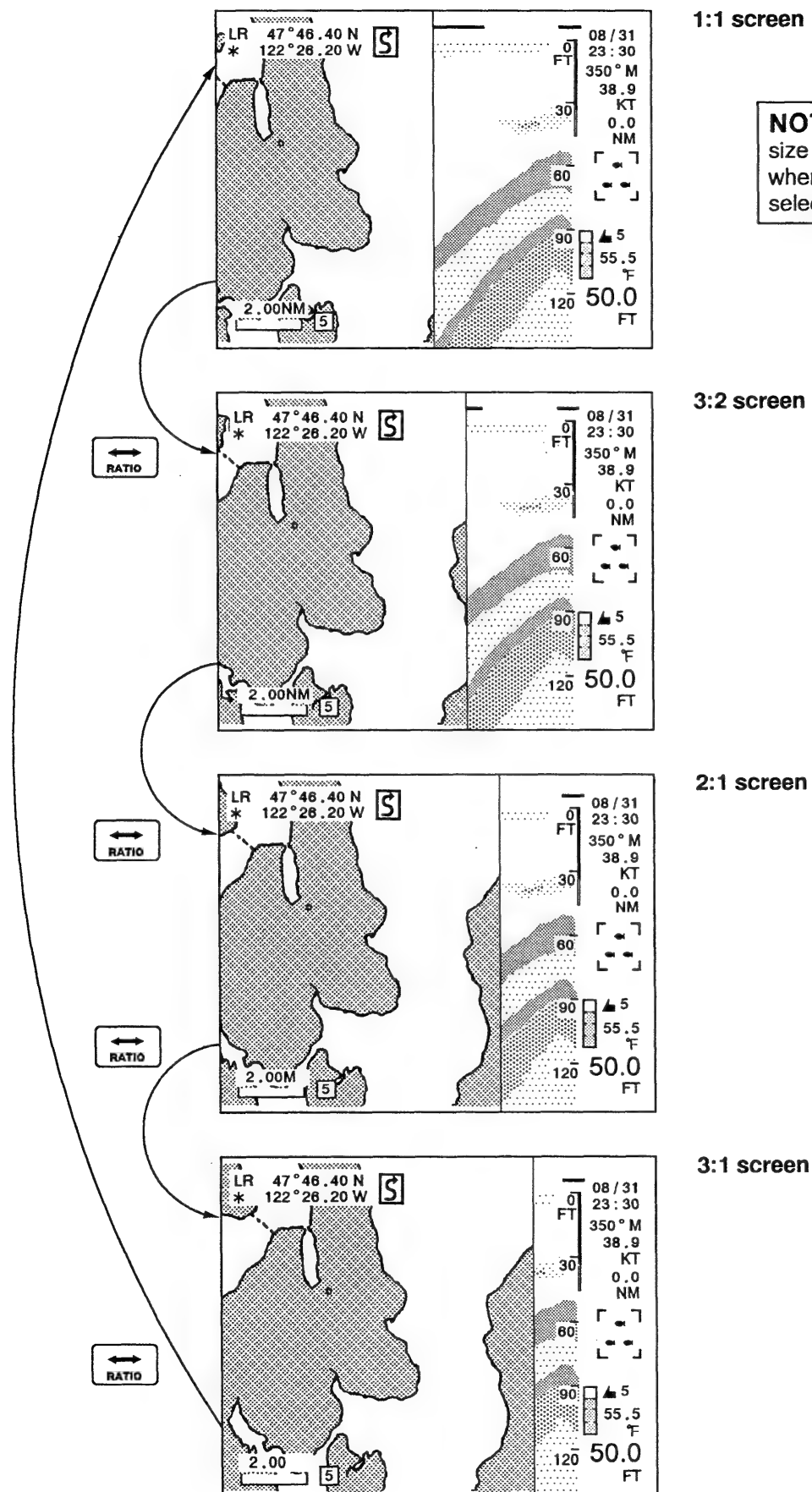
The usual life of the backup battery is approximately 5 years. Once the backup battery is exhausted, the plotter loses the programmed data.

WARNING: Backup battery replacement must be done by an authorized Icom Dealer or Service Center.

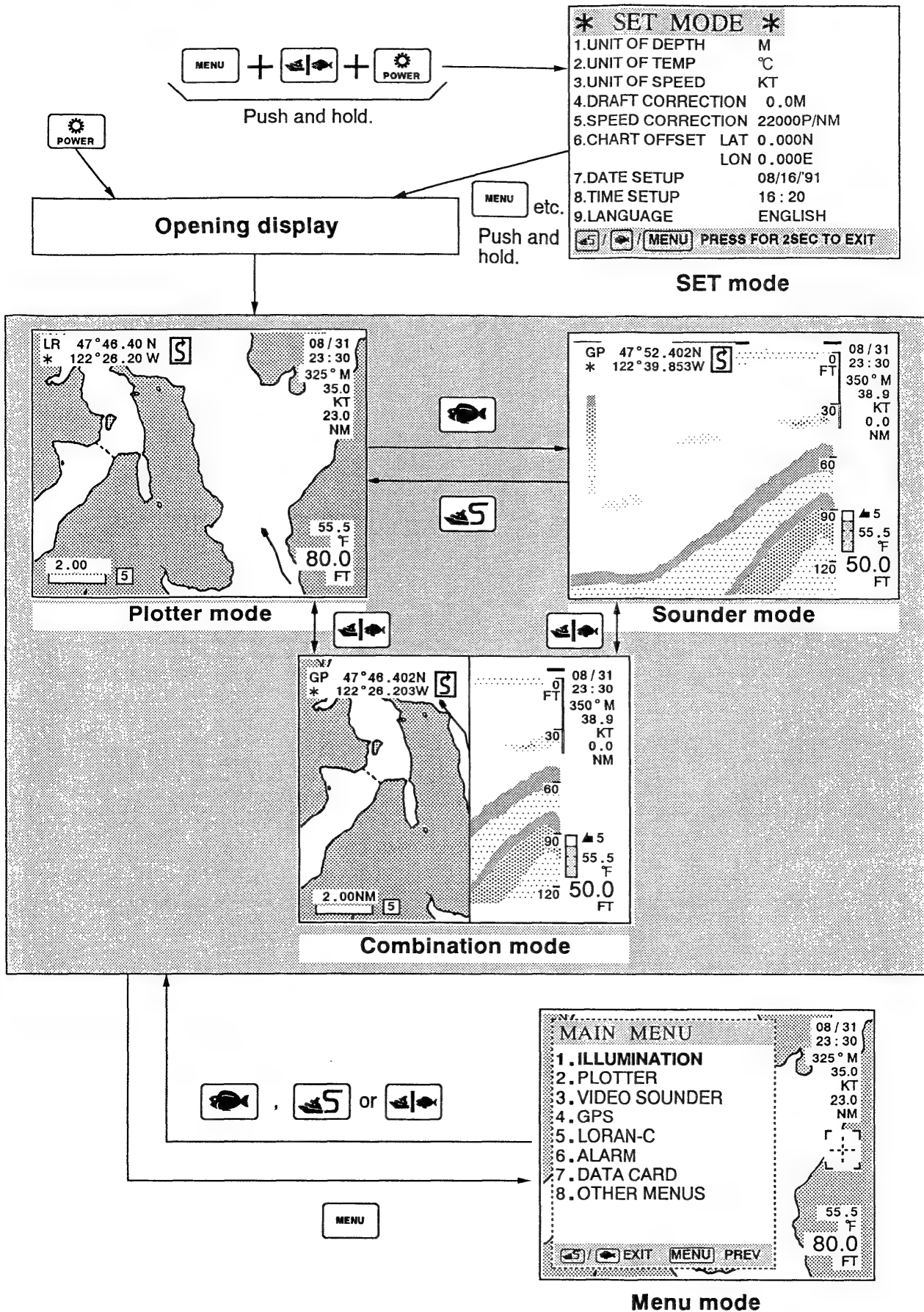




• Combination mode

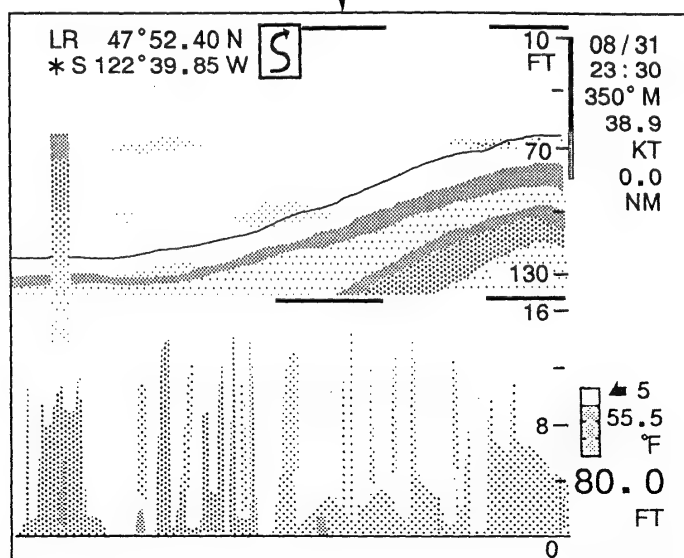
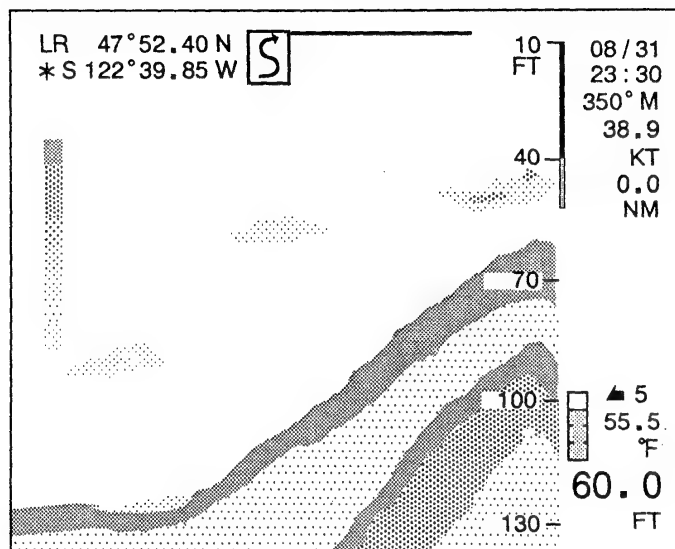


• Power ON → Mode selection



- Sounder mode

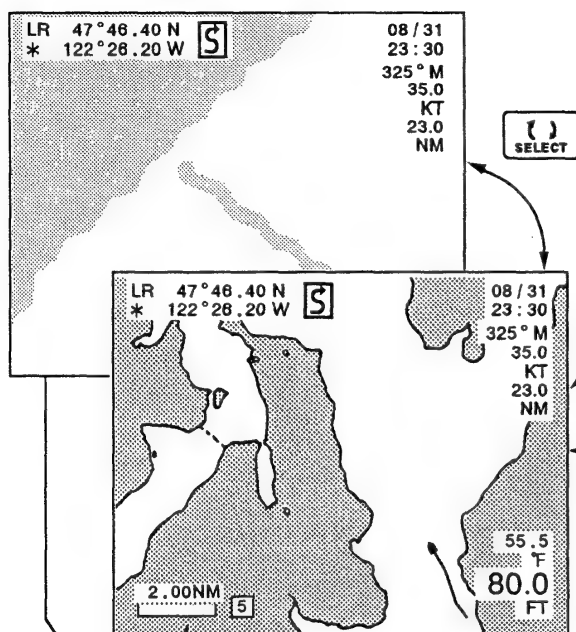
Basic screen



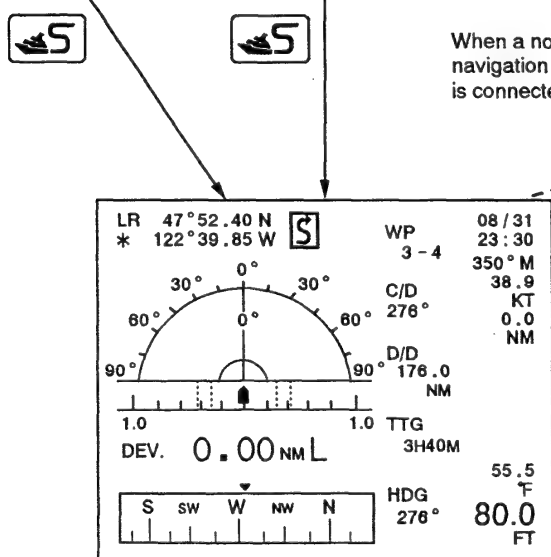
Basic + bottom lock screen

- **Plotter mode**

Plot screen 2



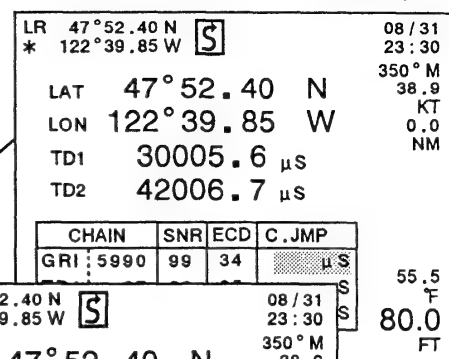
Plot screen 1



Navigation monitor screen

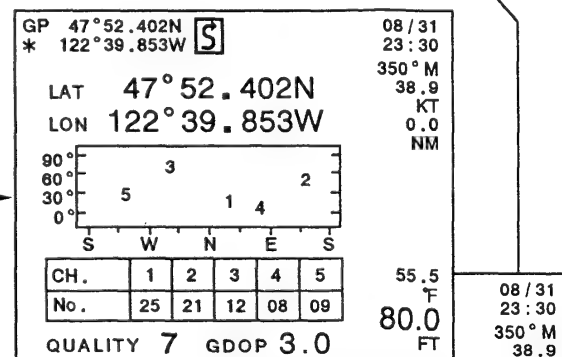
Loran-C monitor screen 2

An optional RX-1191 is necessary.



Loran-C monitor screen 1

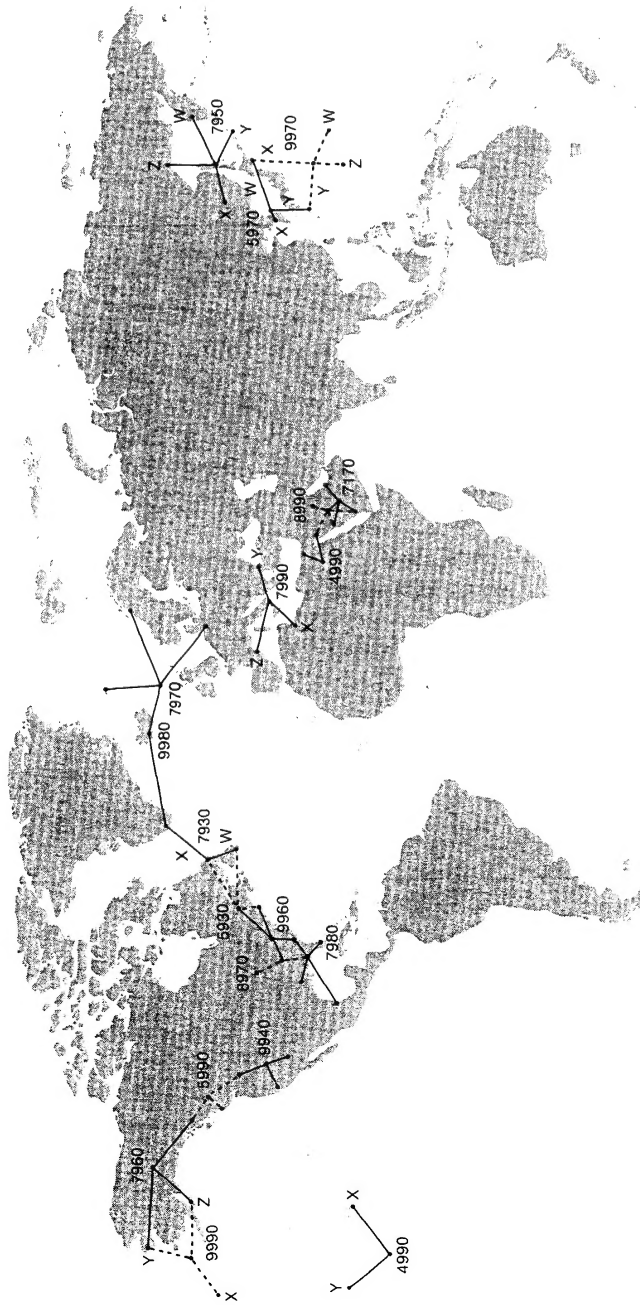
An optional RX-1191 is necessary.



GPS monitor screen 2

An optional GP-2000 is necessary.

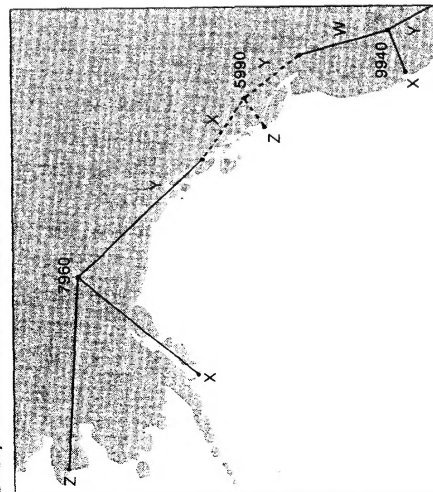
- **Loran-C chain configurations**



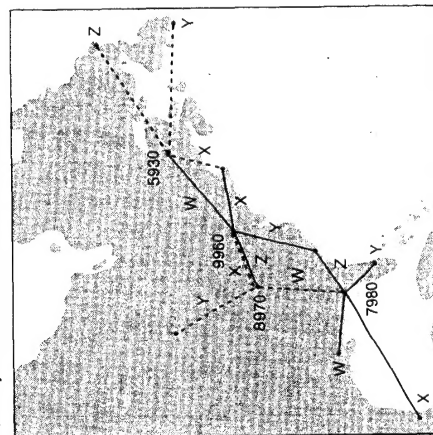
CHAIN STATION	GRI	SLAVE STATION			
		W	X	Y	Z
CENTRAL PACIFIC	4990		11	29	
SUEZ	4990		10	24	
CANADIAN EAST COAST	5930		11	25	38
COMMAND LION	5970		11	31	42
CANADIAN WEST COAST	5990		11	27	41
SAUDI ARABIA (SOUTH)	7170		11	28	39 52
LABRADOR SEA	7930		11	26	
EASTERN U.S.S.R	7950		11	30	46 81
GULF OF ALASKA	7960		11	26	44
NORWEGIAN SEA	7970		28	11	46 80
SOUTH EAST U.S.	7980		11	23	43 59
MEDITERRANEAN	7990		11	29	47
WESTERN U.S.S.R	8000		10	25	50 65
WESTERN EUROPE	8940		14	33	
GREAT LAKES	8970		11	28	44
SAUDI ARABIA (NORTH)	8990		25	40	56 69 11
U.S. WEST COAST	9940		11	27	40
NORTHEAST U.S.	9960		11	25	39 54
NORTHWEST PACIFIC	9970		11	30	55 81
ICELAND	9980		11	30	
NORTH PACIFIC	9990		11	29	43

*Use number 4991 as the chain number.

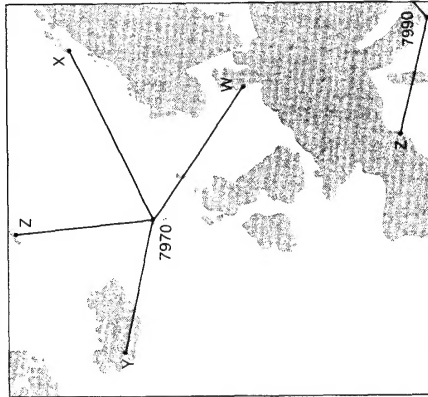
U.S./Canadian west coast



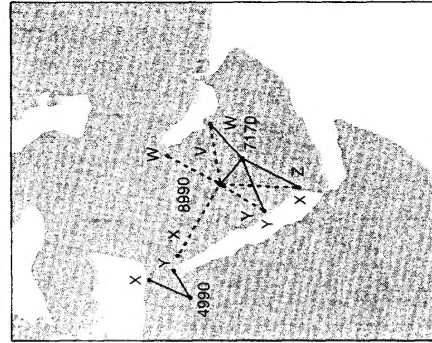
U.S./Canadian east coast



Norwegian sea



Saudi Arabia



11 SPECIFICATIONS

GENERAL

• Display	: 6-inch color CRT	• Dimensions	: 188(W) x 188(H) x 278(D) mm 7.4(W) x 7.4(H) x 10.9(D) in
• Power supply requirement	: 11 ~ 40 V DC	• Weight	: 4.8 kg; 10.6 lb
• Power consumption	: 36 W (at 12 V)		
• Usable temperature range	: 0°C ~ +50°C; + 32°F ~ +122°F		

PLOTTER

• Chart scale	: 0 ~ 9 (10 levels)	• Navigation functions	: ① Destination navigation ② Route navigation ③ External navigation
• Number of track points	: 1200	• Alarm	: ① Arrival alarm ② Anchor alarm ③ Course in alarm ④ Course out alarm
• Plotting intervals	: 5 sec. ~ 60 min. or 0.01 NM ~ 9.99 NM (selectable)		
• Number of waypoints	: Present position + 99		
• Number of event marks	: 100 (with data) 500 (without data)		

SOUNDER

• Transmission frequency	: 200 kHz	• Basic range	: ① 0 ~ 5 m ② 0 ~ 10 m ③ 0 ~ 20 m ④ 0 ~ 40 m ⑤ 0 ~ 80 m ⑥ 0 ~ 160 m ⑦ 0 ~ 240 m ⑧ 0 ~ 320 m
• Output power	: 200 W (rms)	• Phase shift variable range	: 0 ~ 320 m
• Picture advance speed	: 6 levels + synchronization	• Bottom lock/expansion range	: ① 2 m ② 4 m ③ 10 m ④ 20 m ⑤ 40 m ⑥ 80 m
• Alarm	: ① Shallow alarm ② Deep alarm ③ Temperature (up) alarm ④ Temperature (down) alarm ⑤ Fish school alarm		
• Unit of water depth	: ① Meter (M) ② Feet (FT) ③ Fathoms (FM)		
• Unit of water temperature	: °C, °F		
• Measurable water temperature range	: 0 ~ +40 °C; +32 ~ +104 °F		
• Color presentation	: 12 colors		

OTHERS

• Unit of speed and distance	: ① KT (NM) ② km/h (km) ③ MI/h (MI)	• Output data format	: NMEA0183
• Range of trip log	: 0 ~ 999.9 NM, km, MI	• NMEA0183 sentence format	: Input **GLL, **WPL, **XTE, **VTG (** means a wild card.) Output \$LC (When using Loran-C), \$GP (When using GPS), GLL, XTE, AAM, VTG, BOD, WPL, BWC
• CRT brightness	: 25 levels		
• External memory	: ROM card and RAM card		
• Input data format	: ① Icom GPS ② NMEA0182/0183 ③ N + 1 format (heading data)		

All stated specifications are subject to change without notice or obligation.

NAVIGATION RECEIVER, CABLE

- **GP-2000 GPS RECEIVER UNIT**

External GPS receiver unit. Receiver settings and operations including power ON/OFF are controlled by the FP-601. See pgs. 9, 15.

- **OPC-311 GPS CABLE**

Used to connect the GP-2000 and the FP-601.
Length: 3 m.

- **OPC-285 NMEA CABLE**

Used to connect the FP-601 and Icom MR-40 MARINE RADAR or other equipment with an NMEA0182 or NMEA0183 input terminal.
Length: 3 m Connector: BNC type

- **RX-1191 LORAN-C RECEIVER UNIT**

External Loran-C receiver unit. All receiver settings and operations are controlled by the FP-601. Nine notch filters are pre-adjusted corresponding to your area. The connection cable is supplied with the receiver unit. An optional AH-16 is required.

- **AH-16 LORAN-C WHIP ANTENNA**

Required option for the RX-1191. Length: 2.6 m; 8.5 ft

DATA CARD

- **EX-1140 ROM CARD**

Contains read only digitized charts. Depending on the version, 1 ~ 2 charts are included. Your Icom Dealer can tell you which charts are available.

- **EX-1141 ROM CARD**

Contains read only digitized charts. Depending on the version, several charts are included. Your Icom Dealer can tell you which charts are available.

- **EX-1142 RAM CARD**

Stores 2 sets of user definable information. Each set includes 1200 track points, 600 event marks, 100 waypoints and 10 routes. Includes a CR2025 battery and a memory protection switch to prevent accidental data writing or erasing.

TRANSDUCER, SPEED/TEMPERATURE SENSOR, INNER-HULL KIT

- **EX-980 THROUGH-HULL TYPE TRANSDUCER**

When the EX-948 is installed, you need not drill into your vessel's hull.
Beam width: 13° Weight: 570 g; 1.3 lb

- **EX-981 TRANSOM TYPE TRANSDUCER**

Includes kit for stern mounting.
Beam width: 13° Weight: 550 g; 1.2 lb

- **EX-982 THROUGH-HULL TYPE TRANSDUCER**

For super-rugged applications.
Beam width: 13° Weight: 960 g; 2.1 lb

- **EX-1010 THROUGH-HULL TYPE TRANSDUCER**

Has transducer capability plus vessel speed and water temperature measurement capabilities.
Beam width: 10° Weight: 2.2 kg; 4.9 lb

- **EX-948 INNER-HULL KIT**

Lets you install the EX-980 inside your vessel without drilling big holes.
Dimensions: 100(H) × 140(Φ) mm;
3.9(H) × 5.5(Φ) in.
Weight: 290 g; 10.2 oz

- **EX-983 SPEED/TEMPERATURE SENSOR**

Measures vessel speed and surface water temperature. Can be mounted on the stern. No need to drill holes into your vessel.
Speed range: 0.3 ~ 60 KT Weight: 280 g; 9.9 oz

Count on us!

